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Alabama's Contribution to Public Health*

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WHEN the doctors of my state gathered in Huntsville early in 1872 for that year's meeting of the Medical Association of the State of Alabama, there was nothing to indicate that they were about to take part in a gathering that was destined to begin a new chapter in the history of public health. There would be the usual addresses of welcome, the usual responses, the usual technical papers, and the usual social affairs, they believed. Then, they expected, they would return to the cities, towns, and rural communities which they had just left and try to put into practice the knowledge gained during that meeting.

However, the Huntsville meeting of 1872 was not "just another medical meeting"; for, a short time after it got under way, Dr. Jerome Cochran, a Mobile physician whose massive head, chin whiskers and quiet determination had made him a marked man at previous meetings, rose quietly to his feet and told his fellow physicians about a dream that had been spawning in his brilliantly creative mind for a year or more—the organization of a State Board of Health altogether divorced from politics and utilizing to the utmost the collective scientific knowledge of Alabama's organized medical profession. He said:

> I would have a general health law passed by the Legislature of this state, carefully prepared so as not to stand in need of frequent revision or amendment. I would have this law to invest the Medical Association of the State with the functions, powers, and responsibilities of a State Board of Health, and these functions I would have exercised through such organs as the association in its wisdom might think best. I would have the same act of the Legislature to invest each county medical society with the functions of a county board of health, said functions to be exercised through such organs as the said county societies should, in their wisdom, determine to be best.

Nearly three years passed before Dr. Cochran's dream was realized, but on February 19, 1875, the Alabama General Assembly passed a law designating the Medical Association of the State of Alabama as the State Board of Health and also designating county medical

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societies affiliated with the State Medical Association as boards of health for their respective counties.

Thus Alabama became the first state in the Union to place its public health machinery beyond the political pale, and to assure the people and its public health workers that the successful and competent performance of duty, and that alone, would determine continuance in service. Naturally enough, what has become known as "the Alabama system" has won the envy and admiration of health departments in other states whose law making bodies were not so fortunate in having at their command such talented professional leadership.

In the early years of the present century, when the American Medical Association was struggling to bring about uniformity of structure in the various state societies, Alabama's scheme of operation was freely consulted and liberally drawn upon. In 1901 the late Dr. C. A. L. Reed, then President of the American Medical Association, referred to this organization as "the incomparable Alabama plan," and Dr. George H. Simmons, the Secretary of the same body, characterized this association as "the best medical organization in the world." Alabama thus remains, as she became, unique and uniquely fortunate in this important respect.

Although Dr. Cochran's brilliant contribution to Alabama's welfare gives me the best right in the world to include him in a discussion of the medical labors of eminent Alabamians, stern truth forces me to confess, reluctantly enough, that he was not a native of that state. He was instead a native of Mississippi. In spite of poor health and the necessity for helping out on the farm, he obtained what passed at that time for a general education, and this he strengthened by well planned reading and private study. Then, after spending about 6 years as a teacher, he entered the Botanic Medical College, in Memphis, and was graduated as a doctor of medicine 2 years later. He then returned to his native Mississippi and there practised his profession for another 2 years. Then he entered the Medical Department of the University of Tennessee and almost immediately was made resident student in the Hospital of the State of Tennessee. Receiving his degree just on the eve of the outbreak of the war between the states, he became a member of the staff of a 3,000 bed Confederate hospital at Okalona, where he treated large numbers of troops wounded at the Battle of Shiloh.

Shortly after Appomattox he moved to Mobile and there, almost penniless, friendless, and in wretched health, he made a brave bid for enough paying patients to enable him to earn a livelihood. In time he became the city's first health officer, but was relieved of his official duties in 1873 because of politics. It was from the experience gained in this service that he realized how vitally necessary it was to the proper functioning of public health agencies that these two forces, politics and official public health—each powerful in its own natural sphere—be completely and irrevocably divorced.

He was asked to reassume his official duties as the protector of Mobile's health when those placed in charge of that work after his dismissal—politically entrenched but helpless against invading germs—failed miserably to protect it against a serious outbreak of yellow fever and smallpox in 1873 and 1874. His subsequent success in stemming the tide of disease and death in the face of his predecessors' failure has been characterized as "a sanitary triumph without a parallel in the world's history." This success and the fame it brought him resulted in his appointment as a member of the

National Yellow Fever Commission. There too he did characteristically outstanding work.

When the Medical Association of the State of Alabama, as one of its first major acts as a State Board of Health, created the position of State Health Officer, it did not have far to look to find a proper person to fill the position. Who but Dr. Cochran could have been seriously considered? Receiving that honor on April 11, 1879, he served loyally and brilliantly until his death on August 17, 1896. Nearly 10 years later the man who was named as his successor characterized him as "the most original thinker and the profoundest philosopher on professional and public health organization that this country or any other has ever produced."

About 3 years after Dr. Cochran began his staggering task of giving Alabama a creditable public health service, a routine Army order transferred a young assistant surgeon and first lieutenant in the Medical Department from Fort Clark, Tex., to Fort Brown, in the same state. That routine order was destined to have a greater effect upon the prosperity and well-being of the human race than many a command sending an army into the field against a powerful foe.

For that young man was Lieutenant William Crawford Gorgas, a native of the city of which Dr. Cochran had been health officer and a son of a distinguished officer of the Confederate Army. And that transfer order carried this young officer to the outskirts of the City of Brownsville, where a yellow fever epidemic was raging, and thus gave him his baptism of fire in the warfare against this disease, a form of warfare with which the name of Gorgas will forever be associated.

Dr. Gorgas's interest in yellow fever, which had manifested itself even before his period of service at Fort Brown, and which was further enhanced after he himself had contracted but recovered from this disease, found further expression during his residence in various other parts of the country. Shortly after the Spanish-American War got under way, he was promoted to the rank of major and made brigade surgeon. He was in Cuba during the entire Santiago campaign and established a yellow fever hospital in Siboney, near Havana. After the war ended, he again found himself on Cuban soil as sanitary officer of the City of Havana.

The whole world knows the story of this Alabamian's masterful success in ridding that beautiful but disease cursed city of yellow fever, a scourge from which it had been free only intermittently for more than 150 years. It knows, also, of the city-wide clean-up campaign which he generaled and which made the yellow fever transmitting Stegomyia mosquito virtually as much a rarity in that, its ideal breeding ground, as in northern Canada or at the top of Pike's Peak. It knows, too, of the virtual conquest of malaria as a result of this same clean-up campaign, adapted in this particular case to the destruction of the malaria transmitting *Anopheles quadrimaculatus*.

With the completion of his task in Havana, Gorgas was transferred to Governors Island as chief surgeon of the Department of the East and remained there until President Theodore Roosevelt called him to another and a vastly more difficult job of health protection on the Isthmus of Panama, the conquest of yellow fever, malaria, and other diseases which had taken heavy toll of French lives and in the end had brought defeat to the attempt of French engineers and workmen to construct an inter-oceanic canal linking the Atlantic and the Pacific. American failure undoubtedly would have followed French failure had he failed in this task. But he did not fail, and the success of that

enterprise is a source of pride and inspiration to all Americans.

There were other tasks awaiting his magic touch, and he turned quickly to their execution. At the invitation of the President of the Republic of Ecuador, he studied health conditions in that country's capital, Guayaquil, which were so bad that it had to be repopulated every 15 years to prevent it from becoming a city without people. His recommendations, prompted by that study, were carried out, and in time Guayaquil began to enjoy a death rate comparable with that of other cities of similar size and situation. Then came a Macedonian call from South Africa, where miners were dying at an alarming rate from pneumonia. That call came in 1913 and was promptly answered. Here again his studies resulted in carefully thought out recommendations, and health conditions improved markedly after they were put into effect. While in South Africa he made a visit to Salisbury, the capital city of Rhodesia, and aided materially with suggestions and recommendations in reducing the prevalence and killing power of malaria and black-water fever. It was while in Salisbury that he learned of his promotion to the position of Surgeon General of the United States Army, with the rank of brigadier general.

It was his country's great good fortune that such a man as he was the official protector of the health of its fighting men during the approximately 19 months of American participation in the World War. As the United States Army expanded with exciting rapidity from a small peace-time force to a huge military machine of approximately 4 million men, he saw to it that the organization and machinery needed to care for their health expanded rapidly enough to measure up to their increased responsibilities. The remarkable degree of health enjoyed by these men—particularly remarkable in view of the devastating influenza epidemic of 1918—is the best possible proof of his success in that difficult rôle.

Upon reaching the Army's retirement age on the eve of the Armistice, he became associated with the Rockefeller Foundation and spent considerable time in Central and South America. On May 8, 1920, he sailed for England and Belgium, planning to make these two countries intermediate stops on another mission of mercy to Africa, this one in the interest of yellow fever control. Before the second stage of his contemplated trip could be undertaken, however, he became ill and died in London on July 4, the 144th birthday of the nation he had served so loyally in war and in peace. Just a short time before the end came, His Majesty King George V visited him at the hospital and personally presented to him the insignia of Knight Commander of the Most Distinguished Order of St. Michael and St. George.

In his *Report and Recommendations to the Transvaal Chamber of Mines*, this eminent Alabamian's own experience dictated the qualifications essential to efficient health administrators. He aptly defined the character qualifications which are necessary to official health administrators:

> The success of any system of sanitation, which is more or less new to any locality, will depend a great deal upon the choice of the man who has charge of carrying it into execution. If he believes in it, has tact, is enthusiastic and persevering, it will succeed. If he is discouraged by difficulties and opposition, he will fail, even if his system is correct.

Gorgas seemed to be summarizing in this recommendation his own admirable qualities of workmanship. Although not a scientist in the accepted term, his achievements honor its implication. His peculiar genius was displayed in an uncanny ability to select the right man

for a specific task; in transmitting his own gifts of determination and pertinacity and recreating in his colleagues and subordinates a sense of loyalty and devotion which are primary requisites for outstanding accomplishments. This axiomatic statement of Gorgas in these recommendations might well constitute a ritual for every health worker regardless of rank or station.

Shortly after Dr. Cochran's death on August 17, 1896, the Board of Censors of the Medical Association of the State of Alabama chose as Alabama's second State Health Officer Dr. William Henry Sanders, also a resident of Mobile.

Born in Tuscaloosa County, Ala., on July 9, 1838, Dr. Sanders became a Bachelor of Arts graduate of the University of Alabama in 1858 and 3 years later received the M.D. degree from the Jefferson Medical College, in Philadelphia. The ink on his diploma had hardly had time to dry when on June 11, 1861, he enlisted for service in the Confederate Army. The following September he was promoted to the rank of assistant surgeon of his regiment and, on March 6, 1863, received a second important promotion, this time to the rank of full surgeon.

After the collapse of the Confederacy, Dr. Sanders spent considerable time in Europe, carrying on studies in the treatment of diseases of the eye, ear, nose, and throat. After his return he began the practice of his specialty in Mobile and also served for a number of years as a professor in the Medical School of the University of Alabama, which was then situated in the port city. He at once became an active and zealous worker in the Medical Association of the State of Alabama, serving as a member of its College of Counsellors, and in 1890 reached the highest unofficial position of honor within the gift of his fellow physicians of the state—the presidency of the State Medical Association. His success in his chosen specialty, his eminence as a college professor, and his prominence in the affairs of his state's organized medical profession made him the all but inevitable choice for the position which had been made vacant by Dr. Cochran's death. He served his profession and the people of Alabama in that capacity for slightly more than a fifth of a century, considerably longer than any other person who ever held the office.

It was during Dr. Sanders's period of service as State Officer—in 1914—that Walker County, Ala., became the first county in the state, and one of the very first in the United States, to establish its own full-time health department. It was the great pleasure and privilege of the present State Health Officer—your speaker—to participate in the closing episode of this stirring drama of county health organization when, about 2 years ago, Alabama's 67th and last county was established on a full-time health basis. At that time Alabama became, and still remains, one of only three states in the entire Union having a full-time local health department in every county, the only one south of the Potomac and Ohio Rivers, and the only one in which there are as many as 24 or more counties.

In 1906—33 years ago, and well before the creation of the first full-time county health unit in this country—Sanders delivered before the American Medical Association a remarkable and prophetic address whose title was "State Medicine: Its Foundation, Superstructure and Scope." In this thesis, which appeared in the July 6, 1907, issue of the *Journal of the American Medical Association*, Sanders appears at his best in expounding the philosophy breathed into the public health organization which Cochran had created, and in his suggestions of its further expansion so as to make it applicable and workable at the federal

level. At the outset, he defines "State Medicine" to mean "the exercise of power by a civil government for the protection of its people against disease, as well as for the promotion of their physical welfare and development"; and, in the development of his theme, makes no effort to stray off into the then unexplored and controversial realms of "socialized medicine." In his great vision he portrayed a national board of health composed of delegates from state boards of health and functioning through a commissioner of health and a number of assistants, each assigned to a specific duty. Courageously facing the fact that, while constitutional limitations restricted direct federal activities in certain fields—specifically the prerogatives of states—he pointed out that a national board of health nevertheless "could aid immensely in advancing the cause of sanitary progress." He declared:

> The semi-annual meetings of such a board would constitute a great school for study and a great center for disseminating education. The subjects discussed, the demonstrations made, and the data furnished at these meetings would yield a rich and ever-growing mass of scientific and practical information that could and would be applied to the prevention and extinction of diseases. Indeed, the recommendations of such a board would soon acquire a moral force and power more imperious than statutes, state or national.

But, the speaker emphasized, the effectiveness of such a national health set-up need not be limited to that due to moral influence alone. Any number, or all, of the states of the Union had the legal right, he added, "to form a compact and legally bind themselves to abide by the rules agreed upon."

In this way, he declared,

> . . . a national board of health could be the instrument of bringing about the enactment of public health and quarantine laws that would operate across state lines, a kind of legislative work that, in the absence of all public health power on the part of the federal government, can be accomplished in no other way.

And, let me repeat, Dr. Sanders was speaking, not in 1939 but in 1906!

This man was no dilettante; his mind was as thorough and logical as his habits were simple and austere, and he had but small patience with slack-minded thinking, writing, or talking. In debate, he was hardly the peer of Cochran in keenness, in spontaneity, or in the ability to compress in few words the essence of his subject; indeed in this regard, few men equalled or excelled Cochran.

Given a problem of moment, however, and more especially if the question involved medical organization—so thorough would be his analytical dissection, so lucidly and logically would he marshall his facts, that in the end but little ground was left his adversary upon which to stand.

Dr. Sanders's period of service was brought to an end by ill health on January 9, 1917. After nearly a year of release from his heavy burden, he breathed his last, "dying as he had lived," an admirer wrote, "quietly, stoically, bravely."

Fortunately for public health, Dr. Sanders's dream has been substantially realized. Through an ever widening of the manifold activities of the U. S. Public Health Service, through the splendid work of the Children's Bureau, and through the activities of the important group of state health officers, constituting the Conference of State and Territorial Health Officers, the federal government is exerting an increasingly powerful influence upon the health of our people.

The last of this quartet of eminent Alabamians whose labors were in the field of public health was Samuel Wallace Welch, graduate of Howard College, holder of the M. D. degree from the College of Physicians and Surgeons,

in Baltimore, and a post-graduate alumnus of Johns Hopkins University and the College of Physicians and Surgeons in New York City. It was he who, as Alabama's third State Health Officer, was called upon to carry the burden which had proved too heavy for the weakened shoulders of Dr. Sanders.

When it is remembered that his election occurred just about 3 months before the United States entered the World War, it is easy to comprehend some of the difficulties that beset him in his new work. For one thing, he found it a problem indeed to maintain his staff at proper efficiency in the face of volunteer enlistments and the operation of the draft law. Added to these difficulties was the increased menace to the public health that resulted from war conditions. Cantonments were springing up in Alabama as well as in neighboring states, adding to the danger of epidemics. Construction of these cantonments and other war work, paying boom-time wages, sent to Alabama a surging tide of civilian workers, taking with them, in many cases, the diseases with which they happened to be suffering when they left home. His success in dealing with this problem brought enthusiastic praise from those acquainted with it.

Like Sanders and Gorgas, Welch was an Alabama product. Like Sanders, but unlike Gorgas, he spent his entire life within the borders of his native state. The outstanding, the dominant note running through his entire life, was his intense humaneness. By reason of this human touch—marvelous and quite undefinable—he was able to infuse into Alabama's public health machinery, the same machinery which Cochran had carefully constructed a half century before, a *something* which seemed immediately to vitalize and humanize it and to make it workable far beyond the fondest dreams of its author. Reaching further out, he became one of the recognized leaders and workers in the various national health organizations.

He worked his magic spell upon members of the State Legislature and inspired in them a realization of the rich harvest to be reaped from a health policy properly directed and administered, and receiving adequate financial support. Thanks to that influence, it can be said, alike to the credit of the legislature and of the citizenship of the state, which heartily endorsed its action, that ample funds were appropriated for this great work, making possible needed expansion in public health organization, with a resulting and almost immediate effect upon the health picture of the state as a whole.

In the early morning of August 22, 1928, with little premonition of impending death, Dr. Welch died suddenly of angina pectoris. He appeared in his usual health prior to that fatal attack and attended to his regular duties the day before.

In conclusion, the writer considers it a rare privilege to have known personally 3 of the 4 of Alabama's public health leaders whom he has, so inadequately and sketchily, attempted to portray—Gorgas, Sanders, and Welch. The labors of the fourth—Cochran—antedated his coming to Alabama. His personal friendship and association with his immediate predecessors — Sanders and Welch—he places among the most valued treasures of his life.

Methods of Exposing Experimental Animals to Virus Infection Through Mosquito Vectors*

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IN 1933 it was discovered [1] that the mosquito *Aëdes aegypti* was capable of transmitting the virus of equine encephalomyelitis. Prior to that time the only very dangerous virus disease known to be conveyed by mosquitoes was yellow fever, and transmission experiments with that malady, during the past few years, have been carried on only to a relatively limited extent and by a very few research workers. The discovery of the rôle the mosquito might play in equine encephalomyelitis — as might be expected — gave considerable impetus to further work along this line with other species of the insect. Further, as the discovery referred to was the first proof of the ability of the mosquito to convey an essentially neurotropic virus, transmission studies have been undertaken with other viruses of this general type. Thus, with the virus of equine encephalomyelitis now definitely known to be pathogenic for man with a high mortality rate, there is emphasized the importance of conducting mosquito transmission experiments with this and similar viruses with the greatest of care.

In my work with the virus of equine encephalomyelitis and one or two similar viruses I employed a variety of methods for handling experimental mosquitoes and exposing animals to their bites.

For the maintenance of normal mosquitoes it has been our experience that stock or colony cages of fair size are preferable to the smaller sizes used for infected mosquitoes. Stock cages approximately 30″ wide, 26″ deep, and 30″ high are quite satisfactory. These are made of inch-square framing with a light-weight insulating board floor and covered with fine-mesh netting (bobinette). The frame and floor should be given two coats of white paint before the netting is tacked on. In putting the netting on the cages, white, ½″ binding tape will be found of value along the tack lines. The front of the cage (the 30″ side) has two 1″ square uprights each 10″ from the corner posts of the cage. A similar piece of wood is placed at right angles between the two center uprights 10″ up from the cage floor, and another piece in like position 10″ down from the roof. The square opening thus provided in the center of the front of the cage serves as a door.

After the rest of the cage is covered

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with bobinette a piece of the netting is tacked around the door and sewed, all in such a manner that the opening to the cage is protected by an 18″ long sleeve of bobinette which can be bunched and tied with tape.

Experimental feeding cages are smaller, and while they can be made in various sizes, two sizes which have proved very satisfactory are 22″ x 12″ x 12″, and 12″ x 8″ x 8″. As in the case of the stock cages these smaller models are constructed of 1″ framing, covered with bobinette, and have a floor of ¼″, light, insulating board. At one end of the cage the netting is extended about 1′ and the open seam sewed to make a sleeve. This sleeve can then be bunched and tied with a piece of binding tape and serves as the door of the cage.

All cage frames and floors are painted white before the bobinette is put on, and binding tape should always be used in tacking on the netting. It should be understood that white is prescribed for all parts of the cage in order that the mosquitoes may readily be seen wherever they happen to be in the cage.

In addition to the experimental feeding cages, feeding cylinders and globes are of considerable value under certain conditions. We have found straight-wall cylinders 3″ in diameter by 8″ long, as well as ordinary, white glass railroad lantern globes, very satisfactory for making mosquito feeding equipment.

In the case of the straight-wall cylinders a thickness of fine-mesh bobinette is stretched over one end of the cylinder and held tightly in place by a 1″ wide band of adhesive tape. A second, wider piece of adhesive tape should be used and so placed that half of its width overlies the first, and the other half made adherent to the glass cylinder. This is important in order to insure that the net covering the end of the cylinder will not slip off. To the other end of the cylinder there is similarly affixed a bobinette sleeve of essentially the same diameter as the cylinder and extending 6″ beyond the end of the glass. This can be bunched and tied with a piece of binding tape.

The lantern globes are fixed in much the same way as the straight-wall cylinders. The bottom (larger) opening of the globe is covered with bobinette stretched tight and held securely in place with adhesive tape as indicated in the case of the cylinders. The upper (smaller) opening is covered with a 6″ long sleeve comparable to the type described for the cylinder.

The sleeves provided for the cylinders and globes will be found of great service when it comes to placing mosquitoes in the apparatus, and especially when it is necessary to provide the mosquitoes contained therein with water or sugar solution.

It is also very desirable that there be provided, in addition to the cages, cylinders, and globes just described, a number of cages made with *wire* mesh and built a trifle larger than the bobinette-covered variety in order that the latter type cages, cylinders, and globes, when housing infected or supposedly infected mosquitoes, may be still further safeguarded. These wire covered cages are constructed with a door at one end which will admit the bobinette cage.

Another important requirement in experimental work with mosquito transmission of virus diseases is that a small, well screened, feeding room be available. This room should be provided with a vestibule entrance with double screen doors, and if possible a small exhaust fan should be installed near the floor level for rapid ventilation. The fan outlet should, of course, be properly screened. Where such a room is available it can be sprayed with an insecticide after feeding operations, closed for an hour or so, and then ven-

tilated. This serves as an added safeguard in work with infected mosquitoes. Further, if by any chance an accident should occur and infected mosquitoes escape from a cage the situation can be handled by immediately saturating the atmosphere with an abundance of insecticide and leaving the room closed for several hours.

For catching normal mosquitoes in stock cages and transferring them to experimental feeding cages, cylinders, or globes, we have tried a number of methods, but in our hands the use of 15 mm. cotton-plugged test tubes has proved most satisfactory. The procedure is carried out as follows: A technician puts on a pair of surgeon's rubber gloves, making sure that the cuff of each glove is pulled up over the sleeve of his laboratory gown and held in place with rubber bands. Twelve cotton-plugged test tubes are placed on the floor of the stock cage containing the mosquitoes. The sleeve constituting the door of the cage is made tight around the upper portion of the technician's clothed right arm through the use of several rubber bands. He can then pick up a test tube and remove the plug, aiding with his left hand on the outer side of the sleeve, and catch a resting mosquito by quickly placing the tube over it. The forefinger over the mouth of the tube prevents the mosquito's escape pending replacement of the cotton stopper. The tube is then laid on the floor of the cage and the process repeated. After a mosquito is caught in each of the 12 tubes the operator brings them out of the cage and the procedure is repeated with more tubes. After a little experience the average technician becomes very adept and can catch relatively large numbers of mosquitoes in a reasonable period of time.

This method seldom results in injury to the mosquitoes and where necessary each and every one entering into an experiment can be examined in the tubes, under magnification, for species identification. With this method it is easy to place the desired number of mosquitoes in cages, cylinders, or globes, with little chance of injury or escape.

The restraint and handling of experimental animals upon which mosquitoes are to be fed, present a number of difficulties, and great care must always be exercised in this part of the work. The author has found the following methods described as satisfactory as any he has worked with or seen used.

It is always good practice to shave the hair from the area of skin to be exposed to the mosquitoes. In the case of laboratory animals the site is ordinarily the belly wall. With horses the hair is usually shaved from a suitable area on the side of the neck. In all cases only warm water *without* soap should be used in shaving. The use of soap will retard mosquito feeding unless it is thoroughly removed.

Guinea pigs, rabbits, ferrets, monkeys, and dogs, are tied on suitable animal boards. The tape or tying cords are tied through holes drilled in proper places in the boards—no cleats, nails, or staples should be affixed to these boards as the bobinette covering of cages may be torn by them. After tying out any of the animals mentioned, bandage material (preferably muslin) is passed over the feet and around the board a sufficient number of times to insure against the possibility of the animal tearing the bobinette covering of the cage with its claws. This further serves to immobilize the animal more effectively.

Exposure to the mosquitoes is accomplished by placing, side down, on the shaved abdomen of the animal a feeding cage containing the desired number of mosquitoes. The floor of the cage should be toward the animal's head. While the bobinette of the cage

should be reasonably taut over the animal's belly the greater part of the weight of the cage should be supported by two pieces of wood cut to proper thickness for the purpose. There should always be at least one individual present during feeding operations and he should be constantly in position to adjust the cage or promptly remove it from the animal if circumstances require.

Where feeding cylinders or globes are used they are held in place over the shaved skin by the operator. Before starting feeding the bobinette sleeves of the cylinders or globes should be shaken to drive the mosquitoes into the glass compartments, the sleeves quickly twisted a little and folded taut over the side of the containers and held in place with rubber bands. This will prevent mosquitoes from getting up in the sleeves during feeding exposures.

Where horses or other large animals are utilized in mosquito transmission experiments, feeding cylinders or globes are ordinarily more easily handled in stalls or stables than cages.

It is, as in the case of smaller laboratory animals, important in working with the larger species that screened stalls or inclosures be provided for the mosquito feeding operations.

During feeding experiments with very small animals such as mice, special precautions are required to prevent tearing of the bobinette, particularly by the teeth. The best method we have found is to tie the mouse out on a small animal board, then place a piece of thin, fine-mesh copper gauze over its entire body, fitting it against the animal so that the belly wall is firm against the wire mesh. The edge of the copper gauze should be "bound" with a narrow strip of adhesive tape to guard against tearing the bobinette. After all is ready the sleeve of the mosquito cage, cylinder, or globe, is pulled out taut over the mouse in such a manner that the mosquitoes can come out in the sleeve, establish contact, and feed.

Occasionally one will be tempted to tie the mouse securely out on a small board and pass it directly into the mosquito cage. This makes for a satisfactory mosquito feeding but there is always great danger of mosquitoes escaping, especially when the mouse is removed. Further, if the animal does get loose—even if only a leg—a difficult situation may be encountered.

In conducting transmission experiments with a variety of species of mosquitoes it will be found that some are voracious feeders and will promptly bite and engorge under most any reasonable conditions. Other species will be found very fastidious as regards temperature requirements, the amount of light present, etc., and these must be given due consideration to accomplish satisfactory feedings. Some species will feed once and refuse at subsequent opportunities. Still others, with rare exceptions, and in spite of everything one might do, will die before feeding under experimental conditions. Irrespective of the species, it is ordinarily good practice to deny water or sugar solution to mosquitoes the day prior to feeding tests. The feeding room should always be warm—at least 80° F. It sometimes facilitates feeding, in the case of fastidious mosquitoes, if they are put in a cool place for an hour or so prior to taking them to the feeding room. Most species will not take a good blood meal more often than every third or fourth day, although there are some exceptions to this. As a rule, feeding of a group of mosquitoes should be accomplished within 20 to 30 minutes. Ordinarily those which do not feed within that time will not feed.

For our normal mosquitoes, and between blood feedings with experimental lots, we feed them on a 10 per cent sugar solution. In addition small bits of ripe banana are placed in the stock

cages. The sugar solution is placed in the cages in uncovered Petri dishes. A shallow dish of much smaller diameter is used in the cylinders and globes when fluid must be provided mosquitoes contained in them. In putting fluid in cylinders or globes they are first set in a white enamel pan and the empty dishes put in place with the aid of a long pair of straight dressing forceps. The fluid is then run into the dishes with a pipette carefully passed through the bobinette sleeve. In removing the dishes the fluid remaining in them is first drawn up in a vacuum bottle equipped with rubber and glass tubing, the latter, serving as a pipette, drawn out to a capillary point to prevent leakage. The dishes are then carefully taken from the cylinder or globes with the dressing forceps. It is essential that the sugar solution be changed at least every other day.

The main insectory should consist of several rooms or at least be adequately partitioned off in order that infected or supposedly infected mosquitoes may be kept separate from normal stock.

As you will readily appreciate, the few methods I have briefly outlined represent procedures which might be accomplished in some other manner by different individuals. I will repeat, however, that the methods I have described have proved very satisfactory and certainly are safer than a number of others employed in our earlier studies.

REFERENCE

1. Kelser, R. A. Mosquitoes as Vectors of the Virus of Equine Encephalomyelitis. *J. Am. Vet. M. A.*, CXXXII, M. S. 35(5), 767–771, 1933.

Importance of Tabulating Multiple Causes of Death*

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STATISTICS relating to causes of death are derived for the most part from information reported on death certificates. Interpretation of these statistics should therefore be predicated upon an understanding of the characteristics peculiar to this type of information. For this purpose it is necessary not only to study the causes to which deaths are charged, namely, the primary causes of death, but also to investigate the frequency and importance of contributory or associated causes. To this end multiple cause tabulations, or tabulations showing associated and contributory causes in relation to those designated as primary, are indispensable.

During the early and formative years of the U. S. Registration Area death certificates contained much less information on causes of death than they do at the present time. In 1917, for instance, only 35.0 per cent of all certificates filed in the Registration Area reported more than one condition as cause of death. By 1925 this proportion had increased to 44 per cent, and by 1936 to 59.6 per cent. In fact, in 1936 almost 22 per cent of them contained not less than three conditions, as defined by the *International List of Causes of Death*. Thus, at the present time not less than 60 per cent of all death certificates annually filed in this country report more than one condition as a factor in the death.

Accompanying this tendency toward greater detail in the reporting of causes of death has been a salutory improvement in the quality of the information itself. The use of ambiguous and indefinite expressions has declined appreciably during the past decade. In general, certifying physicians seem to be taking a greater interest in the fact that the information which they supply on death certificates is the foundation upon which cause of death statistics are based. This quickened interest together with the increased public attention being directed toward the administration of health activities will no doubt result in even more information being made available on death certificates in the future.

In view of these facts it appears that multiple cause tabulations, or tabulations showing associated and contributory causes of death in relation to those designated as primary, are indispensable. To illustrate the importance of such tabulations, this discussion will deal with the reporting of multiple causes of death on certificates filed in the United States during 1936. Three main points will be considered. The first two relate to (1) geographic varia-

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tions in multiple cause reporting, and (2) differences in the reporting of multiple causes on death certificates assigned to various causes of death. The third point concerns itself with the kind of information which can be made available by means of multiple cause tabulations.

TABLE 1

Reporting of Multiple Causes of Death in the United States — 1936

Area	*Per cent of All Death Certificates Reporting*			*Average No. of Causes Reported per Certificate*
	More than One Cause	*Two Causes Only*	*Three or More Causes*	
United States	59.6	38.0	21.6	1.81
New England	69.5	41.0	28.5	1.97
Pacific	68.5	38.6	29.9	1.98
Middle Atlantic	68.0	41.8	26.2	1.94
West North Central	64.5	38.7	25.8	1.90
East North Central	59.2	38.6	20.6	1.79
Mountain	52.3	35.6	16.7	1.69
West South Central	51.1	36.9	14.2	1.65
South Atlantic	50.5	34.1	16.4	1.66
East South Central	43.9	31.1	12.8	1.56
Connecticut	72.4	39.1	33.3	2.05
New York	72.4	41.4	31.0	2.03
District of Columbia	70.8	47.6	23.2	1.94
Massachusetts	70.7	39.6	31.1	2.01
Wisconsin	70.3	37.9	32.4	2.02
California	70.0	39.2	30.8	2.00
Minnesota	69.7	38.2	31.5	2.01
Vermont	68.1	39.7	28.4	1.96
Rhode Island	68.0	40.2	27.6	1.95
New Hampshire	66.8	49.9	16.9	1.83
Illinois	66.0	39.5	26.5	1.92
Oregon	65.9	37.8	28.1	1.93
New Jersey	65.6	38.0	27.6	1.93
Delaware	65.0	41.2	23.8	1.88
Nebraska	64.8	39.3	25.5	1.90
Washington	64.6	36.6	28.0	1.92
Kansas	64.0	38.5	25.5	1.89
Missouri	63.4	38.5	24.9	1.88
Iowa	63.4	39.5	23.9	1.87
Pennsylvania	63.0	43.9	19.1	1.82
Michigan	62.4	38.8	23.6	1.85
Maine	62.4	46.2	16.2	1.78
Maryland	62.1	41.2	20.9	1.82
North Dakota	61.9	38.7	23.2	1.85
Colorado	60.5	38.5	22.0	1.82
Indiana	59.1	43.1	16.0	1.75
Utah	58.9	39.7	19.2	1.78
South Dakota	58.7	38.3	20.4	1.79
Idaho	57.9	38.1	19.8	1.77
Montana	57.6	37.7	19.9	1.77
Nevada	57.0	36.3	20.7	1.77
Louisiana	56.2	36.4	19.8	1.75
Florida	53.7	33.9	19.8	1.73
Virginia	51.4	34.4	17.0	1.68
Texas	51.4	38.6	12.8	1.64
Oklahoma	50.9	36.5	14.4	1.65
West Virginia	50.5	34.9	15.6	1.66
Wyoming	48.1	39.4	8.7	1.56
North Carolina	46.7	31.5	15.2	1.62
Tennessee	46.5	31.3	15.2	1.61
Kentucky	45.4	33.3	12.1	1.57
Ohio	44.9	35.2	9.7	1.54
Arkansas	43.3	31.9	11.4	1.54
Georgia	43.0	30.8	12.2	1.55
Alabama	42.9	29.9	13.0	1.55
South Carolina	42.8	29.3	13.5	1.56
Mississippi	39.7	29.6	10.1	1.49
New Mexico	37.2	26.1	11.1	1.48
Arizona	35.6	29.8	5.8	1.41

GEOGRAPHIC VARIATIONS IN MULTIPLE CAUSE REPORTING

The first point to be considered is whether death certificates filed in various parts of the country are uniform with respect to the number of causes reported per certificate. Table 1, based on information obtained from death certificates filed in the United States during 1936, shows that they are not. In the New England States, for instance, 69.5 per cent of all death certificates filed during 1936 contained more than one cause of death. In fact, 41 per cent of them reported two causes, while 28.5 per cent reported three or more. The average number of causes per certificate in this area therefore exceeded the average for the country as a whole by about 9 per cent. The Pacific and Middle Atlantic States rank quite close to the New England States in this respect.

On the other hand, only 43.9 per cent of the certificates filed in the East South Central States reported more than one cause. In this area 31.1 per cent reported two causes, but only 12.8 per cent contained three or more. The average number per certificate in this area was therefore approximately 16 per cent below the average for the country as a whole. The fact that death certificates filed in the South Atlantic and South Central States report fewer conditions than those filed in other areas may be attributed to the almost uniform lack of detail on certificates for Negroes.

Comparisons between individual states are even more striking. In New York and Connecticut, for example, 72.4 per cent of the certificates reported more than one cause, approximately 40 per cent reporting two, and about 32 per cent reporting three or more. The average number of conditions per certificate in these two states exceeded the average for the United States as a whole by about 11 per cent. At the other extreme are New Mexico and Arizona, in which only 37.2 and 35.6 per cent of the certificates reported more than one condition as cause of death. The average number of causes per certificate in these states was approximately 20 per cent below the average for the country as a whole. Further differences are evident within the individual states, especially between urban and rural areas, between areas populated predominantly by white people and those having a high proportion of Negroes, between cities having extensive hospital and medical facilities and those not so favorably endowed.

It may be concluded then that the information relating to cause of death as reported on death certificates presents a wide range of variation throughout the United States. In order that the effect of such variations may be evaluated in terms of the resulting statistics, multiple cause tabulations are necessary since they present data showing the relationship between the numerous combinations of causes reported.

DIFFERENCES IN MULTIPLE CAUSE REPORTING AMONG DEATH CERTIFICATES ASSIGNED TO VARIOUS CAUSES OF DEATH

Besides varying from one geographic area to another, the information reported varies according to the particular conditions involved. This is indicated by Table 2 which shows a comparison between the number of death certificates reporting or containing mention of certain causes and the number actually tabulated as due to these causes. In the case of typhoid fever (*International List No. 1*) the number of death certificates mentioning "typhoid fever" as a cause of death was 3,123. Of these only 25, or 0.8 per cent, were assigned to some cause other than typhoid fever. This close agreement accounts for the ratio of 1.01. In the case of "influenza with respira-

TABLE 2

Reporting of Multiple Causes of Death on Certificates Assigned to Certain Causes of Death — 1936

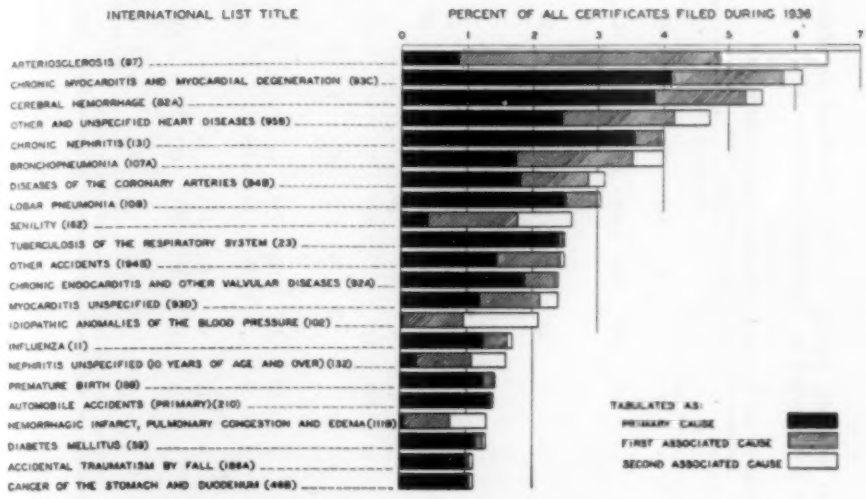
Int. List No.	*International List Title*	*Certificates Assigned to This Cause*	*Certificates Reporting This Cause*	*Ratio*
1	Typhoid fever	3,098	3,123	1.01
7	Measles	1,267	1,350	1.07
8	Scarlet fever	2,493	2,517	1.01
9	Whooping cough	2,666	2,783	1.04
10	Diphtheria	3,065	3,141	1.02
11	Influenza			
a	With respiratory complications specified	22,889	26,306	1.15
b	Without respiratory complications specified	10,922	17,306	1.58
13	Dysentery	3,122	3,700	1.19
23	Tuberculosis of the respiratory system	65,043	66,868	1.03
34	Syphilis	12,612	14,288	1.13
35	Gonococcus infection and other venereal diseases	772	933	1.21
46B	Cancer of the stomach and duodenum	27,241	28,192	1.03
46C	Cancer of the intestines	15,364	16,741	1.09
47A	Cancer of the larynx	1,239	1,383	1.12
47B	Cancer of the lungs and pleura	4,648	10,048	2.16
53C	Cancer of the brain	1,284	2,003	1.56
59	Diabetes mellitus	30,406	33,507	1.10
75	Alcoholism	3,714	8,048	2.17
91a	Acute endocarditis	2,951	5,758	1.95
92a	Chronic endocarditis and other valvular diseases	50,529	63,532	1.26
93a	Acute myocarditis	5,086	11,201	2.20
93c	Chronic myocarditis	110,654	156,194	1.41
94b	Diseases of the coronary arteries	48,622	76,677	1.58
107a	Bronchopneumonia	46,965	94,761	2.02
108	Lobar pneumonia	67,778	80,630	1.19
109	Pneumonia unspecified	4,312	12,463	2.89
130	Acute nephritis	4,161	11,395	2.74
131	Chronic nephritis	95,828	106,540	1.11
132	Nephritis unspecified (10 years of age and over)	6,876	29,230	4.25
140	Abortion with septic conditions	1,801	2,036	1.13
141	Abortion without mention of septic conditions	680	1,225	1.80
146	Puerperal albuminuria and eclampsia	2,235	2,638	1.18
147	Other toxemias of pregnancy	549	1,121	2.04
179	Other acute accidental poisonings	1,465	1,623	1.11
190	Excessive cold	579	908	1.57
191	Excessive heat	4,678	8,914	1.91

tory complications," however, the ratio is much larger, viz, 1.15, indicating that approximately 13 per cent of the death certificates mentioning "influenza with respiratory complications" were actually tabulated under some other cause of death. Other causes listed in the table show still greater ratios, such as alcoholism 2.17, acute endocarditis 1.95, acute myocarditis 2.20, diseases of the coronary arteries 1.58, bronchopneumonia 2.02, lobar pneumonia 1.19, and acute nephritis 2.74. Since many of the conditions listed in the table are frequently reported as complications of other diseases, these relatively high ratios are to be expected.

Figure 1 further illustrates the variation in the amount of detail reported on death certificates assigned to various causes of death. The figure shows, for instance, that arteriosclerosis (I. L. 97) was reported on 6.5 per cent of all certificates filed in the United States during 1936. However, only 0.8 per cent were assigned to arteriosclerosis as the primary cause of death, indicating that in the vast majority of cases it was reported as an associated or contributory condition. This is to be expected since a large proportion of deaths occurring among people of advanced age involve arteriosclerosis. Similarly, chronic myocarditis (93c) was reported on 6.1 per cent of all certificates, while 4.1 per cent were actually assigned to

FIGURE 1

PROPORTION OF CERTIFICATES REPORTING CERTAIN CAUSES OF DEATH TABULATED AS DUE TO THOSE CAUSES



this cause. In the case of tuberculosis of the respiratory system this difference is relatively small, since about 97.2 per cent of the certificates mentioning this disease are actually assigned to it. Other causes of death show various proportions in this respect, some indicating that practically all certificates reporting certain causes are actually tabulated as due to those causes, others indicating that the majority of cases are assigned to some other cause mentioned on the same certificate.

From these observations it again becomes evident that the character of the information reported on death certificates presents considerable variations. For proper interpretation of cause of death statistics the extent of these variations should be investigated, especially since the whole problem of joint cause selection is involved. Thus, any contemplated change in the basic criterion or definition according to which the primary cause of death is determined could be evaluated in terms of statistical frequencies.

INFORMATION WHICH CAN BE MADE AVAILABLE BY MEANS OF MULTIPLE CAUSE TABULATIONS

On the basis of the foregoing observations it appears that a considerable body of information is reported on death certificates which lends itself well to various purposes. In the first place, information on contributory or associated causes is valuable in the planning of well rounded preventive programs since it is essential to know the total incidence in fatal cases of the various diseases and conditions responsible for mortality. Second, statistics showing combinations of causes come nearer the truth than do those based on the single cause principle because the majority of deaths actually result from combinations of causes. Third, multiple cause tabulations would obviate to a great degree the difficulties involved in setting up and applying a joint cause selection system for determining the one individual cause under which each death is to be tabulated when more than one cause is reported.

TABLE 3A[1]

Comparison Between Number of Certificates Reporting Puerperal Conditions and the Number Actually Tabulated as Maternal Deaths, Showing Also the Distribution of Puerperal Conditions as Contributory or Associated Causes — 1936

Int. List No.	International List Title	Certificates: Assigned to This Cause	Certificates: Reporting This Cause	Ratio	Primary Cause Under Which Puerperal Conditions Were Tabulated as Contributory or Associated Causes: N.P.[3]	140	141	142 a	142 b	144 a	144 b	145	146	147	148	149	150
Total	Diseases of pregnancy, childbirth, and puerperal state	12,182	13,675[2]	1.12	1,493	197	196	21	204	320	867	1,679	1,550	262	473	175	18
140	Abortion with septic conditions	1,801	2,035	1.13	234	..	..	..	..	..	..	..	..	..	..	..	..
141	Abortion without mention of septic conditions	680	1,220	1.79	236	..	..	..	..	33	5	..	133	60	73	..	..
142a	Ectopic gestation, with septic conditions specified	100	101	1.01	1	..	..	..	..	..	..	..	..	..	..	..	..
142b	Ectopic gestation, without mention of septic conditions	386	390	1.01	4	..	..	..	..	..	..	..	..	..	..	..	..
143	Other accidents of pregnancy	80	1,069	13.36	410	..	..	..	1	10	30	47	378	53	56	4	..
144a	Placenta praevia	400	455	1.14	9	5	2	..	..	..	..	39	..	..	..	..	..
144b	Other puerperal hemorrhages	998	1,796	1.80	20	79	194	13	172	122	..	148	..	..	..	50	..
145	Puerperal septicemia and pyemia (including tetanus)	2,705	2,748	1.02	43	..	..	..	..	..	..	..	..	..	..	..	..
146	Puerperal albuminuria and eclampsia	2,235	2,636	1.18	131	40	..	1	10	15	60	140	..	..	..	4	..
147	Other toxemias of pregnancy	549	1,117	2.03	69	29	..	1	3	5	39	76	340	..	..	6	..
148	Puerperal phlegmasia alba dolens, embolus, sudden death	567	994	1.75	20	44	..	4	15	16	41	123	33	22	..	109	..
149	Other accidents of childbirth	1,635	4,974	3.04	300	..	...	1	3	119	692	1,034	663	123	336	..	18
150	Other and unspecified conditions of the puerperal state	46	102	2.22	16	..	..	1	..	..	..	22	3	4	8	2	..

[1] Figures in this table include only the first two significant causes as defined by the rubrics of the Fourth Revision of the *International List of Causes of Death* (1929), and as determined by the *Manual of Joint Causes of Death* (1933).

[2] This figure is not a summation of the column, but represents the total number of certificates which reported any cause of death classified under titles 140 to 150.

[3] N.P. = Nonpuerperal.

[a] N.P. = Nonpuerperal.

TABLE 3B

Deaths Assigned to Nonpuerperal Causes Which Reported Puerperal Conditions as Contributory or Associated Conditions — 1936

Int. List No.	International List Title	Total	Nonpuerperal Cause Under Which Puerperal Conditions Were Tabulated as Contributory or Associated Causes															
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
Total	Diseases of pregnancy, childbirth, and puerperal state	1,493	73	147	223	63	38	63	35	34	170	216	135	163	71	6	205	51
140	Abortion with septic conditions	234	9	..	..	13	..	10	1	..	..	1	1	..	1	..	188	10
141	Abortion without mention of septic conditions	236	7	35	3	9	8	12	5	..	25	77	34	..	9	2	2	8
142	Ectopic gestation	5	..	2	1	..	..	..	2	..	..	..	..	..	..	..	..	..
143	Other accidents of pregnancy	410	1	26	5	2	8	16	6	30	87	132	42	19	30	3	..	4
144a	Placenta praevia	9	..	2	..	2	..	..	2	..	..	..	2	..	..	..	..	1
144b	Other puerperal hemorrhages	20	..	2	..	3	..	1	2	..	..	..	1	..	..	..	5	6
145	Puerperal septicemia and pyemia (including tetanus)	43	21	..	..	12	..	2	3	..	..	..	..	..	..	..	3	2
146	Puerperal albuminuria and eclampsia	131	4	7	1	6	..	2	1	..	1	..	11	84	3	..	2	8
147	Other toxemias of pregnancy	69	2	4	..	2	..	1	2	..	..	2	22	27	4	..	2	1
148	Puerperal phlegmasia alba dolens, embolus, sudden death	20	3	5	..	1	..	1	..	..	..	..	4	..	1	..	3	2
149	Other accidents of childbirth	300	24	62	13	12	22	16	10	4	55	4	15	32	22	..	..	9
150	Other and unspecified conditions of the puerperal state	16	2	2	..	1	..	2	1	..	2	..	3	1	1	..	..	..

A = Scarlet Fever
B = Tuberculosis of the Respiratory System
C = Other Tuberculosis
D = Syphilis
E = Malaria
F = Other Infectious and Parasitic Diseases
G = Cancer and Other Malignant Tumors
H = Diseases of the Nervous System
I = Diseases of the Circulatory System
J = Pneumonia (all forms)
K = Diseases of the Digestive System
L = Chronic Nephritis
M = All other diseases
N = Suicide
O = Homicide
P = Accidents

As an example of the type of statistical data which becomes available through the tabulation of multiple causes of death, Tables 3A and 3B are presented. Table 3A shows two important facts: (1) there were actually 13,675 * deaths reported during 1936 as involving diseases of pregnancy, childbirth, or the puerperal state, while published reports show 12,182, or only 89.1 per cent of this total; (2) each of the individual conditions making up this particular group of causes was reported much more frequently than is shown by the usual statistical tabulations. For instance, 1,801 deaths were charged to "abortion with septic conditions" (I. L. 140) during 1936. It appears, however, that septic abortion was actually reported on 2,036 certificates. The resulting ratio of 1.13 indicates that about 11.5 per cent of the death certificates reporting abortion with septic conditions were actually tabulated under some other cause of death. In the case of "abortion without mention of septic conditions" (I. L. 141), the difference is still greater, since only 680, or 55.5 per cent, of the 1,225 certificates reporting this condition were actually tabulated under this cause. In the aggregate, therefore, almost 24 per cent of all certificates reporting abortion as a factor in the death are tabulated under some other cause. Table 3A further shows that 1,493, or 10.9 per cent, of the certificates reporting maternal causes during 1936 were not tabulated as maternal deaths. The question immediately arises as to how they were tabulated. This is shown by Table 3B, from which it can be seen that 50 per cent of these cases were charged to pneumonia (I. L. 107–109), homicide (I. L. 175), tuberculosis (all forms), (I. L. 23–32), and chronic nephritis (I. L. 131). The remaining 50 per cent were tabulated under a wide range of primary causes.

* This figure includes only cases in which puerperal conditions were tabulated as primary or "first significant contributory or associated causes."

INTERNATIONAL CONSIDERATIONS

The desire for international comparability led to the adoption of the *International List of Causes of Death* in 1900 as the official system for classifying causes of death in this country. For several reasons, however, it is incorrect to assume that the use of this system assures true international comparability. First, the habits of physicians in reporting causes of death vary considerably from one country to another. Second, questions used on the death certificate for obtaining information on causes of death are different. Third, responsibility for reporting the cause of death in some countries rests entirely upon physicians, coroners, and medical examiners, while in others this is not the case.

In addition, the reporting of multiple causes of death varies quite markedly between different countries. An indication of this fact is contained in Table 4.

Still another factor leading to differences between the cause of death statistics of different countries results from the methods used in determining the primary cause of death for tabulation purposes. In one study [1] relating to this problem, it was shown, for instance, that in 1,032 identical cases submitted to 18 different countries, the average agreement in selection of the primary cause of death was approximately 57.5 per cent. It appears therefore that at least part of the wide international variations in death rates for specific causes may be attributed to the methods by which the primary causes were selected for tabulation. This emphasizes the necessity for obtaining international comparisons on the basis of multiple causes in order that the effect of the respective joint cause selection systems may be evaluated.

TABLE 4

Proportion of Death Certificates Reporting More Than One Cause of Death in Certain Countries

Nation	Year	Total Deaths	Death Certificates Reporting More Than One Cause	
			Number	Per cent
United States	1936	1,479,228	881,972	59.6
Panama Canal Zone *	1936	582	317	54.5
Scotland (6 Mo.)	1937	31,038	10,546	34.0
Canada	1931	104,517	34,562	33.1
Netherlands	1936	70,613	21,985	31.1
Greece †	1936	23,984	2,884	12.0
Denmark	1937	40,442	483	1.2

* Deaths reported from hospitals only
† Deaths reported from municipalities and some cities having population of 10,000 or more

CONCLUSION

Since death certificates now report much more detailed information than they did some years ago, and since there is an increasing demand for more detailed knowledge of the many combinations of diseases and conditions which cause death, the Bureau of the Census proposes to code and tabulate multiple causes of death annually beginning with the certificates filed during 1941. This means that for all certificates reporting two or more conditions as causative factors in the death, the primary and one associated or contributory cause will be coded and tabulated. In addition, special studies will be undertaken whenever possible, with a view toward making still more detailed information available for the more important causes of death. One such report has recently been published, namely, *Deaths from Alcoholism and Associated Causes*, and others of a similar nature are contemplated. It is hoped that these proposals relating to the tabulation of multiple causes of death will find a ready acceptance among those who make use of vital statistics data.

REFERENCE

1. Janssen, T. A., and Dunn, H. L. Classification of Joint Causes of Death. *Vital Statistics Special Reports*, Vol. 5, No. 47 (Aug. 30), 1938.

Public Health Aspects of Unrestrained Advertising*

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UNRESTRAINED advertising becomes a matter of public health concern primarily in connection with those products which either directly or indirectly affect health—namely, foods, drugs, cosmetics, and the so-called health devices or "gadgets." On the whole, it it found that health workers have but slight acquaintance with what is commonly called food and drug work, and such as they do have is colored by the angle from which it is viewed. In fact, the work itself varies in accordance with the level of its application. In local health service this work consists almost wholly of food sanitation, and has to do more specifically with perishable foods. As such it probably has more of an esthetic than an actual health value. On the state level it assumes somewhat greater importance. Here food standards are defined and enforced, and it is here that the regulation of traffic in proprietary drugs and medicines acquires an important rôle. To a certain extent, also, cosmetics and health devices are given attention, especially where obvious fraud is involved. It is not, however, until the federal level is reached that the maximum effectiveness in control of this whole group of health and beauty aids is realized.

In its relationship to state health organizations, food and drug work occupies a variable and dubious position. Whether by consent of the state health agencies or otherwise, the fact remains that food and drug control is vested in the state health authority in only 19 states. In 18 states it is administered by the state department of agriculture; in 5 states this function is exercised jointly by the health and agricultural agencies; in 11 states by boards of pharmacy or other agencies; and in 4 states there is no agency specifically charged with this duty. This situation is not as strange as it may seem. It will be recalled that the pioneer agency of the government in the development of this work was the Department of Agriculture in 1906. The state machinery for handling this work has in many instances been copied directly from the federal set-up.

In all probability the only direct contact that most of the state officials have had heretofore with this program in the federal government has been almost exclusively with the Food and Drug Administration of the Department of Agriculture. It may therefore be a bit odd to learn that there are other agencies of the government having certain definite responsibilities with respect to

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drugs and similar products sold in interstate commerce. The list includes the following:

1. Food and Drug Administration of the Department of Agriculture, whose duty it is to regulate misbranding and adulteration.
2. The Post Office Department, which has control of fraudulent material transmitted through the mails.
3. The Public Health Service, which exercises control over the standardization of sera, vaccines, and analogous products.
4. The Federal Trade Commission which has jurisdiction over false, misleading, and fraudulent advertising.

The remainder of this discussion will be confined to that phase of this multisided problem which has to do with advertising. To narrow it down further, it will be pointed out that drugs and cosmetics are in essentially the same category, and that foods and health devices have relatively less direct health significance from the standpoint of interstate advertising. Consequently, the major cause for concern arises from the false advertising of drugs, including cosmetics.

Advertising may be either a great asset or a great liability in human affairs. While this observation is true of all advertising, there is no branch of the enterprise in which it applies with more force than in the advertising of drugs and allied products. Gigantic indeed is the volume of advertising relating to products having real health significance, but the health theme is played upon in a vast number of instances in which health is no real factor at all. With the ever advancing prestige and popularity of public health, it is natural that a saprophytic growth of pseudo health issues should attach itself to the genuine stem.

It was 25 years ago when the Federal Trade Commission came into the field to exercise, among other functions, jurisdiction over false advertising. Its fundamental purpose was the elimination of unfair trade practices, of which false advertising is an important part. Under the original act creating the Federal Trade Commission and prescribing its functions and powers, monumental advancements were made in the elimination of false advertising of health and beauty products. The Commission, however, labored under certain handicaps. In order to sustain a complaint against an advertiser, for illustration, it was formerly necessary to prove two things: (1) that the advertising was injurious to the interests of a competitor; and (2) that in the correction of such injurious practice a public interest was being served. It was not always easy or even possible to establish injury to a competitor, though the advertising may have been undeniably false and misleading. In order to facilitate the procedure against false advertising therefore an amendment to the original act was drawn up and passed in May, 1938. This is known as the Wheeler-Lea Amendment.

The amendments to the Federal Trade Commission Act supplement and materially strengthen the powers contained in the organic Act of 1914. Section 5 of the original Act declared "unfair methods of competition in commerce" to be illegal, and vested the Commission with a formal procedure against those engaged in such methods, culminating in an order to cease and desist. It will be seen that this provision was designed to protect the public by assuring it the benefits of free and honest competition among those engaged in business.

The courts, however, in construing the term "unfair methods of competition" held that although a method was established as unfair, and as injurious to the public, unless it could be shown that actual or potential legitimate competition was injured by its use, the Commission was without jurisdiction. Principally the amendment to Section 5 was drawn to remedy this situation by

removing the requirement of showing injury to competitors and emphasizing, rather than changing, the Commission's duty primarily to protect the public. This was done by adding the words "or unfair or deceptive acts or practices in commerce" to the phrase "unfair methods of competition in commerce."

The Wheeler-Lea Amendment has several features with which the public health profession should be acquainted:

1. It defines false and misleading advertising in terms which are so significant that they are herewith quoted as follows:

"The term 'false advertisement' means in advertisement, other than labeling, which is misleading in a material respect; and in determining whether any advertisement is misleading, there shall be taken into account (among other things) not only representations made or suggested by statement, word, design, device, sound, or any combination thereof, but also the extent to which the advertisement fails to reveal facts material in the light of such representations or material with respect to consequences which may result from the use of the commodity to which the advertisement relates under the conditions prescribed in said advertisement, or under such conditions as are customary or usual. No advertisement of a drug shall be deemed to be false if it is disseminated only to members of the medical profession, contains no false representation of a material fact, and includes, or is accompanied in each instance by truthful disclosure of, the formula showing quantitatively each ingredient of such drug."

2. It places special stress upon products which may be injurious to health by providing for:

(a) Procedure by injunction where immediate danger to health may be involved. The Commission also pursues the policy of mandatory complaint against products considered injurious to health, thus excluding their advertisers from the privilege of settlement by voluntary stipulation.

(b) A criminal penalty, including a fine of $5,000 and/or 6 months imprisonment for the first offense and double these amounts for the second offense.

3. The criminal penalty and injunctive provisions also extend to cases involving fraudulent advertising.

It should be noted, however, that the Commission has no power to exclude any product from the market. Its authority is limited to the issuance of a cease and desist order inhibiting the use of specified false and misleading claims, and claims of like import. When it becomes necessary to conduct prosecution for violation of the Commission's orders this is done by the Department of Justice, upon request from the Commission.

The volume of business in foods, drugs, cosmetics, and devices alleged to improve health, I will not attempt to estimate in figures since there are no accurate statistics on this subject. It may be stated with confidence, however, that the traffic in this group of products is of the magnitude of a major industry. There must be exceedingly few persons in these United States who are not at some time during the course of a year affected either for good or ill by products belonging to this group. In this connection two questions naturally arise: (1) Is the money profitably invested? (2) Is there any harm derived from such purchases?

It is not my purpose to discuss the economic side of this subject. The public health is not directly affected by the fruitless expenditure of money, though this does have an indirect bearing upon the public health problem, since the more we spend for no good purpose, the less there will be available for legitimate health protection. The fact remains, however, that the principal issue is question 2—as to harmful effects from falsely advertised medicines. Some are quite devoid of harmful effects when used under conditions which are customary or usual, while others are not. The true differentiation between harmful and harmless, however, is not to be found by consulting the morbidity and mortality records. Even where potent drugs may be the direct cause of deleterious or fatal

effects, the situation is rarely so diagnosed and recorded. Also there are various degrees of toxicity ranging from a chronic low grade poisoning to acute and severe reactions menacing to health and life. In some instances chronic poisoning may, because of its insidious nature, be more detrimental even than acute intoxications.

As an illustration of the class of preparations against which the Commission has already proceeded on the ground of harmful effects, the following excerpts from the formal complaints of the Commission in application for temporary injunction are cited.

1. A fat-reducing remedy: D. 3609

"The representations contained in the advertisement hereinabove set out, and in other advertisements similar thereto but not set out herein, are false, misleading and untrue. This preparation is not widely prescribed by practicing physicians as an aid in reducing weight. Many ill effects are often experienced from its use. Said advertisements of respondents are also false in that they fail to reveal that the use of this product under the conditions prescribed in said advertisements, and under such conditions as are customary and usual, may be injurious to the health of the user thereof by causing loss or serious impairment of eyesight and in other ways injuring or impairing the functions of the human body.

"The true facts are that the active agent contained in said preparation '281' is the drug dinitrocresol. This drug is a powerful stimulator of body metabolism. Through the accelerated metabolism rate caused by the use of this drug body tissues, particularly fat, are more rapidly destroyed. This drug, however, has a marked toxic effect, causing, in some cases, direct degenerative changes in the vital organs and the formation of bilateral cataracts on the eyes of the persons subjected to its use."

2. An abortifacient remedy: D. 2934

"The Commission finds that the representations hereinbefore set out and other representations similar thereto not set out herein, appearing in respondent's advertisements, are false, misleading and untrue. This preparation is not a competent, safe nor scientific treatment for delayed menstruation. It is not recommended by physicians. Said advertisements of respondent are also false in that they fail to reveal that the use of these preparations under the conditions prescribed in said advertisements and under such conditions as are customary and usual may result in the serious illness, and in some cases, in the death of the user.

"The true facts are that the use of either of these preparations may result in gastro-intestinal disturbances such as catharsis, nausea and vomiting with pelvic congestion, inflammation and congestion of the uterus and adnexa leading to excessive uterine hemorrhage, and in those cases where either of these preparations is used to interfere with the normal course of pregnancy, may result in uterine infection with extension to other pelvic and abdominal structures causing septicemia or blood poisoning."

The drugs employed in this case include ergotin, extract of cotton root bark, extract of black hellebore, aloes, oil of pennyroyal, oil of savin, and quinine sulfate, all of which are common ingredients of abortifacient preparations. Other drugs contained in many similar abortifacient remedies against which the Commission has instituted injunction proceedings include ergot, apiol, and oil of tansy.

3. A liquor habit cure: D. 3735

"The representations hereinbefore set out and other representations similar thereto but not set out herein appearing in respondents' advertisements are false, misleading and untrue. This preparation is not a competent, safe or scientific treatment for alcoholism. Its use may have ill effects upon the human body. Said advertisements of respondents are also false in that they fail to reveal that the use of this product, under the conditions prescribed in said advertisements, and under such conditions as are customary and usual, may result in the serious illness and in some cases the death of the user.

"The true facts are that the preparation *Alcoban* contains the following active ingredients:

Emetine Hydrochloride
Ephedrine Hydrochloride
Pilocarpine Hydrochloride

"Each of these drugs is in itself potent and harmful, and when combined with the others as in this preparation results in a compound which may have marked toxic, and in some cases fatal, effects upon the human system."

It is worthy of note that thus far no application for temporary restraining order has been denied by the federal courts.

In addition to the foregoing class of drug preparations there is another and much more extensive group in which harmful effects may or may not be expected. While danger is not inherent in their use, nevertheless, they cannot always be truthfully represented as unqualifiedly safe. Neither safety nor danger in drug therapy is absolute. Both of these factors are relative, depending upon a variety of conditions such as age and physical condition of the patient, size and frequency of dosage, and duration of the treatment. But with all due allowance for these variable quantities, there will still be encountered not a few instances wherein injurious effects may result from many of the commonly advertised remedies. In this list belong certain products such as: analgesics or painkillers, nerve sedatives, contraceptives, cold cures, epileptic cures, drink habit cures, rheumatic remedies, purgatives, hay fever and asthma remedies, depilatories, hair dyes, and skin bleaching preparations. Although the foregoing list is decidedly abridged, it will not be practicable to discuss each one of these items in detail.

It has been previously noted also that even nontoxic drugs may have a public health significance, when relied upon for virtues which they do not possess. It is a notorious fact, for example, that tuberculosis, cancer, chronic kidney diseases, heart disease, and other similar disorders are preceded by prolonged incipient or prodromal stages during which the symptoms may be quite indeterminate and variable. It is during this period that the credulous public become victims of worthless and sometimes even toxic nostrums, losing whatever opportunity they might have had for averting impending doom until it is too late for competent medical service to be of any avail. Another splendid example is found in the worthless diabetic cures. The public health world would be shocked to know of the number of fake diabetic remedies which are being relied upon by scores of thousands of Americans for relief from diabetes, and which can only result in disaster.

If it were within the scope of this discussion to trace the public health implications connected with all drug products used in self medication they would indeed form an impressive array, but all I can hope to do at this time is to establish in the minds of public health workers the fact that drug control as it pertains to preparations sold to the public for self administration is a major public health problem which must be reckoned with as such. Over and above the immediate dangers to health, the mass of misinformation and downright falsehood that is being carried in advertising columns concerning health is a challenge to the energy and ingenuity of health agencies to set the public aright.

Frequent reference has been made in this discussion to hazards associated with self medication. In order that there shall be no misunderstanding on this subject, I should like to state what I consider to be the rational attitude toward this matter. It is believed to be sound doctrine that the diagnosis and treatment of all human ills can best be accomplished by a competent physician. It does not, however, follow that self medication has no place in our social order. Many of the simpler ailments are too trivial to justify a requisition upon the time of a skilled physician who has more serious duties to occupy his attention. In many instances, also, a physician is not immediately available to render emergency or first aid treatment. Moreover, under the prevailing system of medical prac-

tice, the difference in cost of a physician's services as compared with home remedies may decide the issue as to whether the patient is to receive some degree of relief from his ills or none at all. And finally, regardless of its limitations, self medication is the inalienable right of Americans. But when drugs are placed at the disposal of laymen for self medication, it is their right to know the unalloyed truth as to what may properly and reasonably be expected from their use. Furthermore, the public should be warned in every possible way and safeguarded against the use of drugs which may be harmful when used without adequate medical supervision. These are the items for which advertising should be held accountable.

It has already been recognized that the first line of defense against false and misleading advertising of health and beauty aids rests with the Federal Trade Commission. I would not, however, leave the impression that the states have no part to play in this program. There are, on the contrary, certain very important contributions which the state health departments can and should make. Some of these include the following:

1. It would be in the interest of efficiency if state regulations were revised, if necessary, so as to be both complementary and supplementary to the federal laws as regards unfair or deceptive acts or practices in advertising of foods, drugs, cosmetics, and devices.

2. Also, state regulations should be such as to control the sale of those drugs which are sold over the counter without any advertising and where the laws governing misbranding and adulteration are not involved.

3. Whenever trial on a complaint by the Federal Trade Commission is scheduled, it becomes necessary to secure competent medical testimony. The Federal Trade Commission must appeal to some agency within the state to assist in obtaining the services of suitable medical authorities. This function can be performed either by the state health agency or the state medical association. As a matter of fact, it has been performed by both with a high degree of satisfaction. Since this phase of the proceedings is often the most essential link in the chain, it will readily be seen that in arranging for this service a highly important contribution is made.

4. The better classes of publishers of newspapers and magazines are anxious to clear out falsehood and misrepresentation from their advertising. Local publishers should, therefore, be encouraged to seek the advice of state and local health officers with respect to legitimate claims in the advertising of medicinal and allied products, and should be induced, if possible, to exclude from their columns all advertising which may be false or even questionable.

5. Not the least of the contributions that can be made by state and local health agencies to the drug control program is through the educational approach. Complete effectiveness will never be accomplished by law enforcement alone. If the people are made aware of the truth they may be relied upon to do their part. But to convey the truth to others the health agencies must first know the truth themselves. It is suggested that the most fruitful source of such information is found in the federal agencies concerned with this problem. Speaking for the Federal Trade Commission, I have reason to believe that this organization would be happy to supply all interested health agencies with copies of all stipulations and cease and desist orders, which clearly define the grounds upon which official action is taken. Were the pertinent facts in this material to be re-

layed to the public by the health agencies, and followed up by appropriate comment, an enlightened popular interest in these problems would be expeditiously achieved. The public must be made advertising-conscious and label-conscious, so as to recognize fallacy and deception. This is a job which only the health agencies can perform.

SUMMARY AND CONCLUSION

1. The hazards associated with falsely advertised foods, drugs, cosmetics, and devices are such as to constitute a major health problem.

2. One of the most potent means for regulating unfair practices and protection of the public health interets is found in the control of false and misleading advertising, and the advertising of products which may be dangerous to health.

3. The responsibility for such control rests primarily with the federal government, whose laws are now reasonably adequate to meet the demands.

4. As the second line of defense the state and local health agencies have certain very important supplementary duties to perform. To this end the state laws should, as expeditiously as possible, be revised and modernized so as to conform with and supplement the federal laws. But even without any changes in the existing state laws, state and local health forces can make many vital and indispensable contributions to the success of the campaign against dangerous nostrums and the false advertising of other medicinal products.

The Federal Works Agency and Public Health

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ACTIVITIES of the Federal Works Agency in the field of public health comprise construction programs under the PWA, and construction and service programs under the WPA. The recent grouping of these two agencies (together with United States Housing Authority, Public Buildings Administration, and Public Roads Administration) under the new Federal Works Agency will make it possible to attain greater efficiency and economy in operation of projects.

Public health activities carried on by WPA and PWA are very extensive, as the members of the American Public Health Association know from direct experience. A report on those activities, however, may be of interest to them not only in the light of recent legislation by the Congress, but also in the light of the controversy now going on among physicians, health officers, and other interested persons upon the whole matter of federal activity in public health.

Your former president, the Surgeon General, stated the essential fact about federal participation in public health work in a speech before the A.P.H.A. three years ago:

> We may have confidence not only in objectives of today's national health program, but also in its method. The federal-states relationship in public health functions smoothly because we merely are extending a well established procedure. In 1880 the Congress authorized the Public Health Service to cooperate with states in the prevention and control of epidemic diseases. The mechanism of such coöperation has been worked out during the past 56 years. We can cite this half century of federal-states relationship in public health in support of the soundness of the principle, in the flexibility of action which is permitted, and in the avoidance of overcentralization.

Our newer federal agencies have in some respects erred in their application of this principle to specific cases, but they are learning from experience, and in the future they will rely to an even greater degree upon the experience of the U. S. Public Health Service. Thus they will guard against certain evils likely to exist in a program involving the expenditure of great sums of money. Haste is one of those evils; insufficient study of needs is another; insufficient review of proposed projects is a third. Before summarizing the programs already conducted, therefore, I feel that it should be stated that such criticism of PWA hospital projects as have already been made are salutary and necessary if we are to avoid overbuilding or ill-advised building in a program of such great importance. The Federal Works Agency invites and welcomes thorough study of its construction program in the field of health and will coöperate with medical authorities in adapting that program as efficiently as possible to local needs.

Great care must be used in planning hospitals in sparsely settled areas. Questions of maintenance and staff must be answered satisfactorily. We cannot afford, by over-ambitious programs of hospital construction, to set up small local islands of competition within areas already adequately served. Therefore the Federal Works Agency welcomes the review of PWA hospital projects suggested by the Surgeon General in a recent communication, and it welcomes constructive and thorough criticisms of its operations. Only through the closest coöperation can we deal adequately with the problem of the federal-states relationship in public health, and eliminate all possible grounds for controversy among us.

I believe that the more we consult together the better it will be for the people who rely on us to assist in providing an adequate physical plant and such services as WPA is prepared to provide. Any disagreement among the consultants who treat so important a patient as the United States of America must sooner or later be reconciled—and time is of the essence. Our concern as builders is to see that money is not wasted.

With this restatement of an essential principle, I am glad to be able to cite the following achievements under the Federal Works Program.

1. PWA HOSPITAL CONSTRUCTION

In 1938 the President's Interdepartmental Committee, in its report, *The Need for a National Health Program*, estimated that two-thirds of the states had fewer general hospital beds than were indicated by professional standards of adequacy. It is true that many apologists for the status quo have referred to the number of unoccupied hospital beds in any given year. Such references must be considered disingenuous, however, when one remembers that beds in a large proportion of our hospitals are beyond the economic reach of the majority of citizens. From all current studies, it would seem clear to an unprejudiced observer that the need for public hospitals in which beds will not remain unoccupied because of prohibitive rates, is a definite and unavoidable one.

PWA has done more to meet this need than any other agency now in existence. Up to the present time, PWA has provided a total of 121,760 hospital beds at a cost of $377,644,883. This is the equivalent of 5 years'

TABLE 1

Summary of Non-federal Hospital Projects by Type

(As of October 1, 1939)

	Beds		*Estimated Cost*			
	Number	*Per cent*	*Amount*	*Per cent*	*Approximate Average Cost per Bed*	*Number of Projects*
Insane asylums	42,922	39.8	$102,903,731	25.9	$2,397	165
Institutions for feeble-minded	8,914	8.2	19,618,397	4.9	2,201	38
Epileptics	1,818	1.7	5,296,314	1.3	2,913	10
Tuberculosis	13,508	12.5	50,306,715	12.6	3,724	119
General	18,307	17.0	96,256,457	24.2	5,257	250
Charitable homes for aged	6,866	6.4	15,279,629	3.8	2,225	60
All others *	15,514	14.4	107,592,463	27.3	6,935	101
Total	107,849	100.0	$397,253,706	100.0	$3,683	743

* Included are hospitals not falling into above classifications and projects which have hospitals of two or more classifications in one project docket. Included in this figure is $56,496,207 not for direct hospital construction but part of the multiple type hospital projects.

growth under normal conditions. PWA, however, has not yet been able to meet existing hospital requirements because of the fact that from 1929 to 1939 a deficiency in hospital construction amounting to about $550,000,000 had been accumulated.

From 1933 to 1939 PWA accomplished 71 per cent of the total increase in hospital construction. Federal hospitals under this program have been provided for veterans and for men in active service, and a vast increase has been made in medical research stations. PWA financed non-federal hospitals include general hospitals, tuberculosis hospitals, mental hospitals, and homes for the aged and indigent.

For federal hospitals a total of $36,887,384 had been allotted up to March 1, 1939, and 151 hospitals and institutions had been built.

Service and utility buildings for existing hospital plants have also been provided by PWA. There have been hundreds of projects for rebuilding kitchens, boiler plants, power and light plants, nurses' homes, administration buildings, staff quarters, garages, water supply systems, and other utilities.

PWA has also made allotments for construction of medical and dental schools, as well as for clinics, dispensaries, and research centers for educational institutions.

2. PWA SEWAGE DISPOSAL PROJECTS

Eleven per cent of all PWA non-federal work has been devoted to the construction of sewerage systems. About 67 per cent of all new sewage treatment plants built since 1933 have been PWA projects.

During the past few years there has been less progress in the construction of incinerators and other garbage and refuse disposal plants than there has been in the construction of municipal sewage disposal systems. The 41 projects so far undertaken, however, represent the finest plants of their sort in the world.

Mechanization of garbage disposal and sewage treatment has advanced greatly under PWA. There has been a definite increase in the number of complete chemical and mechanical treatment plants using by-products such as sludge for fertilizer and gas for power.

But the need for further building continues to be great. It has been estimated that at present 1¾ billion gallons of sewage a day receive adequate treatment, 1½ billion gallons receive only primary treatment, and 2½ billion gallons receive no treatment.

Of course, not all wastes require full treatment. But every local problem must be carefully considered, and the proper treatment provided. Hundreds of communities now plan to provide

TABLE 2

Non-federal Sewage and Refuse Projects

(As of March 1, 1939)

	Number of Projects	*Estimated Cost*	*Funds Supplied by Applicant*	*Total*	*Loan*	*Grant*
Sewage disposal plants	873	$325,357,874	$122,298,876	$203,058,998	$ 85,405,015	$117,653,983
Sanitary sewers	463	87,614,366	41,533,453	46,080,913	11,335,649	34,745,264
Storm sewers	116	20,576,184	11,022,708	9,553,476	2,049,887	7,503,589
Combined sewers	75	32,759,590	12,537,254	20,222,336	8,196,295	12,026,041
Grand total sewer and water (jointly)	196	23,786,950	6,565,476	17,221,474	8,407,156	8,814,318
Grand total garbage and rubbish disposal	41	10,909,406	4,299,333	6,610,073	2,743,750	3,866,323
Grand total sewage system	1,527	466,308,014	187,392,291	278,915,723	106,986,846	171,928,877

adequate facilities as soon as they can finance their projects.

3. PWA WATER WORKS PROJECTS

The problem of water supply is deeply involved with that of proper sewage treatment and stream pollution control. While Chicago, for example, can draw upon Lake Michigan for its water supply, it has had to reverse the flow of the Chicago River so that its wastes would not be poured into the source of its drinking water. Filters, chemical treatment and purification plants must be employed by many cities to guard their water supplies against pollution from other cities.

More progress has been made in the provision of adequate water supply than in sewage disposal and stream purification, but industry and air-conditioning together are making increased demands upon the supply available.

From 1919 to 1929, municipalities spent an average of $119,000,000 a year for new water works. By 1933, however, the average had fallen to less than $47,000,000. Between 1933 and 1939 new construction rose to an average of $85,000,000 a year. PWA financed projects accounted for about 50 per cent of this total.

There have been 2,372 non-federal water works projects costing $298,869,149, actual construction varying from 37 to 77 per cent of all new non-federal water works construction a year. Communities in every state have undertaken new construction of this type, the number of projects ranging from 158 in Ohio to 3 in Delaware.

PWA has been very successful in detecting high fluorine content in water, and it has brought about the installation of many water softening and iron removal plants. Other plants have provided for chlorination, filtration, and aeration. In connection with PWA water works projects, more than 500 treatment plants of various types have been constructed. PWA water works have furnished a public supply of potable water for the first time to more than two million people.

4. WPA CONSTRUCTION AND SANITATION PROJECTS *

Construction of health facilities by the WPA has been carried on in the same categories as in PWA, with the addition of certain others not open to the PWA method.

An extensive program of hospital building and repair has been conducted, with more than 100 new hospitals built, 1,422 repaired and improved, and 38 provided with additions, up to June 30, 1938. Reports on physical accomplishments for the fiscal year 1938-1939 will be available shortly. It may be interesting to state here that in the 8 month period from July 1, 1938, to March 1, 1939, WPA construction of new buildings of all types averaged over 15 a day. Construction of hospitals averaged about 3 new hospitals per month and 40 hospital buildings repaired or improved.

Community sanitation, malaria control, and mine-sealing activities are carried on in close coöperation with the U. S. Public Health Service, under an agreement which provides for supervision by the Service as well as for the assignment of technical supervisory personnel to the state health departments. WPA funds for this technical supervision were reduced by the Congress from $500,000 in 1938-1939 to $300,000 in 1939-1940. The sum of $300,000, I should note, was set by the House; the Senate raised it to $600,000, but it was cut to $300,000 again in Committee.

The community sanitation projects call for the building of sanitary privies of the concrete slab pit-type in small

* All figures for WPA projects through June 30, 1938, unless otherwise noted.

towns and suburban areas, where sewers cannot be built. The prevention of the spread of filth-borne disease is of course the object of this program. A campaign of education goes along with it, and results are good as long as proper equipment and proper supervision are provided. But this requires an adequate public health staff far above what is now available. Under this program, the owner pays for the materials, which cost from $18 to $30. Supervisory costs per unit average about $.75. Construction according to Service specifications is carried on by WPA workers. Up to the present time, it is estimated by the Service that about 25 per cent of the needed work in this field has been done. Under all three of the Emergency Relief programs—CWA, ERA, and WPA—some 2,140,000 sanitary privies had been built by April 30, 1939. Of this total the WPA had built 1,759,000.

Success of this program in actual numbers of typhoid cases prevented has been reported by many state health officers. In a letter to Colonel F. C. Harrington, Commissioner of the Work Projects Administration, the Surgeon General gave a few statistics that should be of interest. Dr. Parran said:

> In Mississippi in 1932, there were reported 161 deaths and 917 cases of typhoid fever; while in 1937 only 77 deaths and 349 cases were reported. . . . The State Health Officer of Mississippi has stated that cases and deaths from hookworm disease and dysentery have shown a reduction similar to that for typhoid.
>
> In Tennessee in 1932, there were reported 308 deaths and 1,898 cases of typhoid fever; while in 1937, only 148 deaths and 763 cases were reported. More than 175,000 sanitary privies have been constructed in this state.
>
> The records for West Virginia show a reduction of from 1,265 cases and 218 deaths from typhoid fever in 1932, to 350 cases and 78 deaths in 1937.

In a letter to me on last September 13, H. A. Kroeze, Director of Sanitary Engineering for the State of Mississippi, writes as follows:

> As a result of this very material assistance (WPA community sanitation and malaria control) we have been able, in the past 6 years, to accomplish in rural sanitation an amount of work equivalent to 31 years of effort at our normal rate of progress and in malaria control drainage an amount of work equivalent to approximately 45 years of endeavor at our former rate. . . . In 1933 the death rate per 100,000 from malaria was 33.5, whereas in 1938 it was 11.9. A similar condition is found in the death rate of typhoid fever. In 1933 the rate per 100,000 population was 6.5 and in 1935 it was 2.9.

Similar statistics are now available for many other states. L. M. Clarkson, Director of Sanitary Engineering, Georgia Department of Public Health, reports a drop in the typhoid death rate from 8.4 in 1933 to 4.5 in 1937. For malaria the reduction has been from 12.2 in 1933 to 7.5 in 1937.

Dr. A. T. McCormack, State Health Commissioner, Kentucky, submits a very interesting table of typhoid death rates.

KENTUCKY

Year	*Population*	*Total Deaths*	*Death Rate per 100,000*
1928	2,553,000	392	15.3
1929	2,553,000	315	12.3
1930	2,614,589	416	15.8
1931	2,614,589	379	14.1
1932	2,614,589	337	12.9
1933	2,638,000	317	12.0
1934	2,638,000	296	11.2
1935	2,638,000	240	9.1
1936	2,866,000	209	7.3
1937	2,920,000	160	5.5
1938	2,920,000	127	4.6

In a letter to me of September 19, 1939, Dr. McCormack states that typhoid fever and other water-borne diseases have now been almost entirely eliminated in almost every one of Kentucky's 120 counties.

Two programs carried on under the close supervision of the Service are the WPA malaria control and mine-sealing programs.

Since the beginning of the WPA in 1935, malaria control drainage projects

TABLE 3

WPA Construction of Water Supply, Sanitation and Drainage Systems

December, 1939

Type	*Unit of Measurement*	*New Construction*	*Reconstruction or Improvement*
Water mains, aqueducts or distribution lines	Miles	9,646	2,737
	Consumer connections	239,000	344,000
Storage tanks, reservoirs, and cisterns	Number	2,089	539
	Gallons of capacity	1,475,043	20,940,104
Wells	Number	3,182	
Treatment plants:			
Sewage (excl. cesspools and septic tanks)	Number	549	313
Water	Number	124	108
Garbage incinerators	Number	74	42
Pumping stations	Number	646	219
Storm and sanitary sewers	Miles	15,191	3,050
	Service connections	352,000	33,000
Manholes and catch basins	Number	472,000	282,000
Drainage (other than roadside and mosquito eradication)	Miles of ditch	3,697	15,562
	Miles of pipe	1,613	907
	Acres drained	3,412,000	10,850,000

have been conducted in an average of 250 counties in 16 states. Up to June 30, 1939, 15,654 miles of ditches had been dug and cleaned, resulting in the drainage of 2,981,000 acres of actual water surface, thereby affording protection to some 7,064,425 people who live within mosquito range of the projects.

Since malaria appears to have a 6 year cycle, sufficient time has not elapsed for definite statistics on the results of the program, but the Surgeon General has already pointed out that through the WPA drainage program our control of this disease has been advanced 20 years beyond the point it would otherwise have reached.

Control of acid pollution of streams, another important public health measure, is maintained through WPA projects for the sealing of abandoned coal mines. The Public Health Service furnishes consultant service on these projects to the WPA and the state health departments through trained technical personnel stationed in four regional offices.

Before the beginning of the WPA program, it was estimated that 2,450,000 tons of acid (on the basis of concentrated sulfuric acid) were discharged every year into the Ohio River and its tributaries. Some 1,024,000 tons were estimated as originating in abandoned mines. Over 500,000 tons of acid have already been sealed off in the Ohio River basin, over 8,000 tons in Maryland, and over 12,000 tons in Alabama. Mine-sealing projects are now in operation in Maryland, West Virginia, Ohio, Indiana, Illinois, Tennessee, Alabama, Pennsylvania, and Kentucky.

Statistics on WPA construction of water mains, reservoirs, treatment plants, etc., are available up to the close of the fiscal year in June 30, 1938.

5. WPA PROFESSIONAL AND SERVICE PROJECTS IN THE FIELD OF HEALTH

Doctors, dentists, nurses, clerical personnel, and skilled and unskilled workers of certain types have been made available by the WPA under a very broad program of supplementing and extending work done by existing health agencies. The main categories under which this work is carried on are:

a. Research and surveys
b. Clerical and technical assistance to health departments
c. Clerical and technical assistance to hospitals and medical schools and institutes
d. Maintenance of clinics and health centers, and assistance to others
e. Provision of visiting nurses
f. Provision of housekeeping aides
g. Nursery school and parent education program
h. Hot school lunch program
i. Special projects

Of course, it is impossible in this brief space to give more than a bare outline of these services. I shall content myself with some statistics and with brief mention of a few outstanding projects.

One of the most important of these was the National Health Survey, administered by the Public Health Service, which was the most far-reaching inventory of the nation's health ever drawn. Some 5,000 trained enumerators, drawn from WPA rolls, canvassed nearly 800,000 families in 19 states and 84 cities. The data they gathered cover the entire field of acute and chronic disabling illness and the treatment received by all groups of the urban population of the United States. Reports issued by the Service cover scores of separate studies made possible by the survey. In the light of the present discussion of a national health plan the importance of this survey can hardly be overestimated. Incidentally, Public Health Service officials have assured us of the efficiency of WPA white-collar workers on this and other similar projects.

As far as assistance to health departments goes, one can only advise those who are not yet aware of the scope of such work to visit their city health departments and ask their guide to point out to them the people in the various bureaus who are paid out of WPA funds. One would then need to make an extended visit to projects in the field. Only then would an adequate picture be gained of the extent to which WPA assists our city health departments. Many good examples are provided in the December 12, 1938, report of the Commissioner of Health of New York City—as in tables like Table 4.

TABLE 4

Classification of the Personnel of the New York City Bureau of School Hygiene, 1937

Title	*Civil Service*	*WPA*	*ERB*
Acting Director (Physician)	1	..	..
Medical Supervisors	12	..	..
School Physicians	100	77	..
Ophthalmologists	14	..	..
Cardiologists	2	..	..
Chief of Dental Division	1	..	..
Dental Supervisors	6	..	..
Dentists	37	98	21
Dental Hygienists	48	46	17
Stenographers	2	1	..
Clerks	1	9	..
Grand Totals	224	231	38

A similar examination of our city hospitals would show WPA nurses, laboratory assistants, attendants, and unskilled workers performing their tasks within the existing structure of the hospital administration. Health departments, medical schools, and institutes have been able to carry on many laboratory and research studies through WPA assistance; typical examples are the Michigan State Department of Health projects for isolation of whooping cough germ and development of serum, and the New York City Pertussis Clinic studies. Dr. Merrill Moore's studies of alcoholism at the Haymarket Relief Center in Boston are an especially interesting example of important research work done through WPA assistance.

Clinics maintained or assisted by WPA are of all types. Maternal and child health clinics, tuberculosis prevention clinics, venereal disease clinics like the excellent ones in Chicago and New York City, are some of the most

interesting. Dental clinics provide a very important service to people who would otherwise not receive needed treatment. Up to June 30, 1938, more than 3,500,000 persons had been treated in such clinics. Nurses had been provided at 893,000 immunizations, and 4,737,000 home nursing visits had been made.

A beginning has also been made in one of the most sadly neglected fields of all—that of providing housekeeping workers in poor homes where illness or childbirth has disabled the mother. WPA housekeeping aide centers have been established in most large cities, where women are trained to cook, clean, and care for children. These women had made over 7,000,000 visits up to June 30, 1938.

The nursery school program has brought proper care of young children into many thousands of poor homes. In a typical year, this program provides some 1,500 nursery schools for 40,000 children between the ages of 3 and 5.

The WPA school lunch program has met the problem of undernourishment among underprivileged children in the most direct way by providing a hot lunch to them on every school day. Up to December 31, 1939, 386,197,000 such lunches had been served.

Many special projects, initiated because of local need and local public spirit, further serve to expand the work which is being done under the WPA health program. A splendid example is the Tuberculosis Preventorium Project in Amarillo, Tex., which has given local initiative a chance to show what it can do. Civic clubs, business firms, churches and Sunday school classes donated money to carry on this project. A local club donated money for the building. Brick masons, carpenters, plasterers, painters, and plumbers donated labor. Merchants and farmers contributed.

Local effort and good will can do much when aroused; and when it works in coöperation with the Department of Health and with federal agencies like the WPA and the PWA, it is great cause for pride to see what can be done.

Of course, it is easy to avoid responsibility by pointing to work that has already been done. As Dr. J. W. Mountin of the Public Health Service once said:

> It is always restful, in any hard climb, to look backward and praise ourselves for our progress. But doing this is like comparing a gravel road with the muddy cow-track upon which our ancestors travelled, in order to demonstrate to ourselves that we can get along without a concrete highway. But we cannot get along without the finest highway to health that it is possible for us to build. What we need is an awakening of our national conscience for the health of all our people. Nothing less than such a national awakening will serve to meet the situation.

I am encouraged to believe that we shall have a new birth of coöperation on a large scale among private and public agencies devoted to the problem of achieving here in the United States the highest health standards in the world. The President's reorganization plan is one step in that direction centralizing, as it does, much of the national interest in these programs in the Federal Security Agency, with facilities competent for technical research and standards, and in the Federal Works Agency with skill, organization and experience in the field of construction.

Nutrition and Health in Pasadena*

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THE health officer is interested in all factors which are related to the health status of the community. He desires to apply the factual information regarding food requirements and food composition which has in recent years been supplied by laboratory workers.

The first step in the application of this knowledge to human needs is to ascertain the actual diet of the individuals composing different communities. The quality of the dietary may then be compared with the recommended standards and with the health of these individuals. From such comparisons the problem in each community can be definitely ascertained and where called for appropriate remedial measures may be intelligently undertaken.

Pasadena, 9 miles from Los Angeles, has a population of approximately 85,000. It has no large industries, but is a living place for many individuals employed in the City of Los Angeles, and others retired from various parts of the country. The percentage of families on relief is approximately 11.5, the same as the average for that of Los Angeles County.

The nutrition survey was carried out between May and August, 1938, under the auspices of the California Institute of Technology, the Health Section of the Council of Social Agencies, and the Health Department. The diet of 50 families was ascertained by the inventory method. These families were chosen at random from those on relief, to those with incomes of $3,000 per year. Most of the families were in the $1,200 to $1,800 income group. Ten were on total or partial relief. The group was composed of 151 adults and 72 children below the age of 14.

The diet data were analyzed into the following items: calories, protein, fat, carbohydrates, calcium, phosphorous, iron, vitamin A, vitamin B_1 and vitamin C. The nutritional data were obtained by public health nurses from the Health Department, the Visiting Nurse Association, and other members of the Health Section of the Council of Social Agencies. Each family was visited every day for 2 weeks. An inventory was made of all the food on hand at the beginning of the study. For 2 weeks the amount purchased and the amount of actual waste were recorded daily and at the end an inventory was made of the food remaining. All items, including the waste, were weighed or measured.

The clinical examination, carried out approximately one year after the study was started, was made by one of us *

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* Read before the Food and Nutrition Section of the American Public Health Association at the Sixty-eighth Annual Meeting in Pittsburgh, Pa., October 20, 1939.

* Wilton L. Halverson, M.D.

with the exception of teeth and gums which was done by Herbert Brenner, D.D.S.

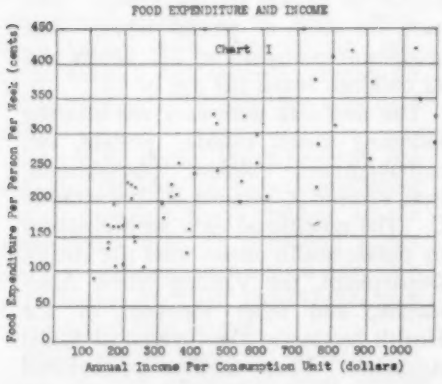
A history was taken to secure data relative to present and past incapacities and diseases. A routine physical check was made with special attention to those conditions which might indicate possible nutritional deficiencies. This was supplemented by hemoglobin estimation and, where the hemoglobin was below 13 grams per 100 cc. of blood, by the red cell count.

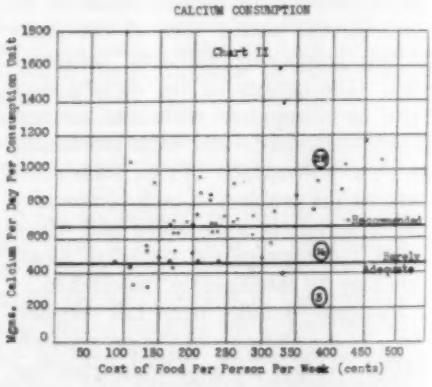
ANALYSIS OF THE DIETARY DATA

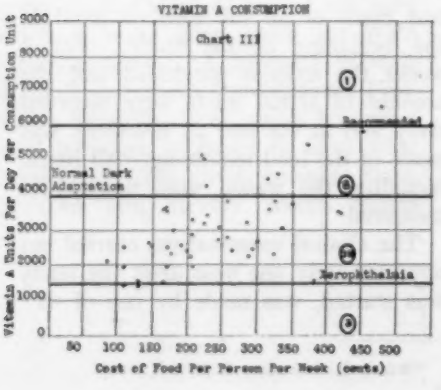
Standard tables were used, modified according to the latest information in the literature, especially in regard to the vitamin and iron content. The figures for physiologically available calcium and iron were used instead of the total content, where these data were available. In the case of vitamin A, two Sherman units were taken as equal to one International Unit.[1]

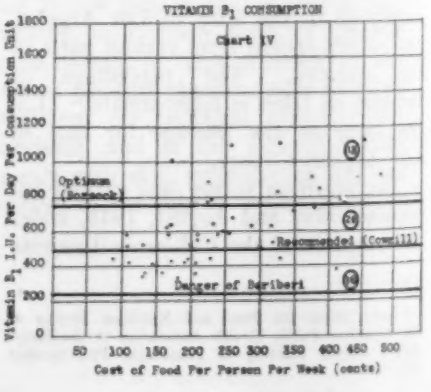
There are serious discrepancies between the newer figures on the vitamin B_1 content of common foods and the older ones. Wherever such discrepancies existed we have used the latest reliable figures, especially those of Baker and Wright.[2, 3] The vitamin B_1 content of milk and meat have been rechecked in our laboratory by rat growth and phycomyces growth methods. Two Sherman units were taken as equal to one International Unit.

We have followed Stiebeling and Phipard[4] in the choice of the food unit requirement, and also taken their estimate of the requirements of different ages and sex. The unit in every case


FOOD EXPENDITURE AND INCOME
Chart I
Food Expenditure Per Person Per Week (cents)
Annual Income Per Consumption Unit (dollars)






VITAMIN B1 CONSUMPTION
Chart IV
Vitamin B1 I.U. Per Day Per Consumption Unit
Optimum (Sherman)
Recommended (Cowgill)
Danger of Beriberi
Cost of Food Per Person Per Week (cents)

is the requirement of an adult male engaged in moderate work. Women and children are considered as some fraction of this unit greater or less than unity.

FOOD COSTS

Chart 1 shows the relation between the cost of food and the annual income. The smallest amount was $.89 a week for each person, and the largest $4.80. Most of those spending less than $2.08 a week for each person obtained an inadequate diet as measured by present nutritional standards. On the other hand, the diet was adequate in nearly all families spending more than this amount. The dividing line was remarkably sharp. This does not mean that $2.08 was necessary in order to secure an adequate diet. A few families with some special knowledge of nutrition and with the will to apply it did obtain a first-class diet for as low as $1.50 a week for each person.

Stiebeling and Phipard [4] found that in 1935 Pacific Coast families with average intelligence required a weekly expenditure of $2.25 per person per week which is very near the figure shown by this study.

CALORIES

More families with ample funds for food had an ample caloric intake than those on restricted budgets. Twenty-two families had less than the recommended intake of 3,000 calories per consumption unit per day, and 14 had less than 2,700 calories, which is 10 per cent below the standard.

Height and weight checks showed as large a per cent of underweight in families having an adequate caloric intake as those below the recommended standard.

It is probable that caloric intake standards are higher than necessary or at least apply only when there is need of excessive heat production.

PROTEIN

None of the 50 families obtained less than the daily consumption unit minimum recommended by Sherman (45 gm.). Twelve families obtained less than 66 gm., which is the recommended amount. In view of the uncertainty regarding the optimum protein requirement of human beings it is probable that even those obtaining less than 66 gm. of protein daily were nevertheless obtaining adequate amounts. In practically every case one-half or more was of animal origin. Since authorities recommend as a minimum only one-third of total protein to be of animal origin, we may conclude that the protein intake in all of these families was adequate with respect to both quality and quantity.

CARBOHYDRATE AND FAT

In all cases, except two, 25 per cent or more of the total calories was provided by fat, and 35 of the 50 families obtained approximately one-third of their calories from fat. The balance between carbohydrate and fat in the diet may be considered normal and the amount of each adequate.

CALCIUM

Chart II shows that of the 50 families, 5 were obtaining less than 450 mg. per consumption unit daily. These families, therefore, were probably in negative calcium balance, that is, they were probably excreting more calcium than they were eating. Sixteen families were obtaining between 660 and 450 mg. daily per consumption unit.

According to modern nutritional standards, therefore, the calcium intake of these 21 families was inadequate.

IRON

Eight mg. of iron daily is the minimum requirement for iron balance, according to Sherman. Authorities differ as to the optimum iron requirement.

Amounts varying from 10 to 15 mg. are recommended. In our series of 50 families there was only one obtaining less than 8 and one between 8 and 10 mg. per consumption unit. The iron intake, therefore, may be considered as generally adequate. One of the important sources of iron was leafy vegetables of which relatively large amounts were consumed.

VITAMIN A

In computing the vitamin A intake, we have followed Leila Booher,[5] taking the vegetable vitamin A (beta carotene) as being only 60 per cent as available as that of animal origin. Chart III shows that 3 families were obtaining less than 1,500 I.U. per consumption unit daily. There was in these a definite danger of xerophthalmia. An additional 38 of the 50 families obtained less than 4,000 I.U. daily. It is probable, according to Booher,[5] therefore, that most of the members of this group, if tested, would have shown less than the normal rate of retinal dark adaptation. Only 8 families obtained between 4,000 and 6,000 I.U. of vitamin A per consumption unit daily, and only one family more than 6,000 units daily. Yet, 6,000 I.U. daily is the amount recommended by nutritional workers.

VITAMIN B_1 (THIAMIN)

Chart IV shows that only two families in our series obtained less than 350 I.U. of vitamin B_1 daily per consumption unit. They received 340. Therefore, the study showed no real danger of beriberi. On the other hand, there were 14 families in addition who received less than 500 I.U. per consumption unit daily. Approximately one-third were obtaining less than the generally recommended amount.

This figure of 500 I.U. daily is by no means the optimum amount for adults. From studies which one of us[6] carried out it is indicated that 750 I.U. daily is required by most adults for good gastrointestinal function. In our series there were only 13 families who received 750 units per consumption unit or more daily.

In view of the fact that such physiological stresses as pregnancy, fever, hyperthyroidism and strenuous work, call for increased vitamin B_1 intake, the 16 families who obtained less than 500 I.U. per consumption unit daily may be considered as subsisting on a somewhat unsafe level of B_1 intake. It is interesting that among the poorer families an adequate amount of B_1 was obtained only by those who consumed in fairly large quantities at least two of the following items: peanut butter, a cereal consisting of wheat middlings with added wheat germ (which has become widely used in southern California), whole wheat bread.

There are four other known components of the B complex aside from B_1, and there are probably others. The human requirement of these other components is not so well established as that of vitamin B_1. Nevertheless, the whole B complex is required. In a mixed diet, however, the vitamin B_1 content may be taken as an index of the amount of the whole B complex because the distribution of other members of the B complex is in most cases similar to that of B_1. For this reason, natural food sources rather than single purified components would best be used except as prescribed by physicians in specified clinical conditions. Purified vitamins should not be used in place of natural foods.

VITAMIN C

Every family in the group studied obtained 70 mg. or more (the optimum recommended amount) of ascorbic acid daily per consumption unit. This high consumption of vitamin C which is unusual in most urban areas in the United States results from the easy

availability of leafy vegetables as well as citrus fruits. In 74 per cent of the families studied the former contributed more vitamin C than citrus fruits.

A summary of the nutritional findings of the 50 families is noted in Table 1. This shows that 12 families were deficient in three or more essential items, while 18 enjoyed an adequate diet in every respect.

TABLE 1

Nutritional Deficiencies

Number of Deficiencies	*Families*
0	18
1	14
2	6
3	7
4	3
5	2
	50

TABLE 2

Consumption of Foodstuffs per Week per Consumption Unit

	Average for Fifty Families
Bread, cake, pastry, rolls, flour (as flour)	50.3 oz.
Butter	6.3 oz.
Cheese	2.6 oz.
Eggs	5.0
Fresh milk	7.35 pt.
Canned milk (calculated equivalents of fresh)	0.56 pt.
Meat	31.20 oz.
Fish	4.40 oz.
Potatoes	28.10 oz.
Vegetables (other than potatoes)	60.60 oz.
Fruit	47.70 oz.
Sugar	19.90 oz.

Table 2 shows the average weekly consumption of the different foodstuffs per consumption unit in the group studied. The milk consumption was somewhat above the average for the country as a whole. Fruit and fresh vegetable consumption was much higher than that of the country as a whole, which accounts for the large intake of vitamin C. Even with this large consumption of fruit and vegetables, most families did not obtain enough vitamin A, and about one-third of the families did not obtain adequate amounts of vitamin B. These figures indicate the difficulty of obtaining the necessary amounts of vitamins even on the so-called good diet and they emphasize the need of education of the public on the quantitative aspects of nutrition.

CLINICAL FINDINGS

Although the clinical examinations were made about one year after the study was instituted, it is probable that they represent a fairly accurate picture of the physical status of the families at the time of the study, since no changes were instituted in the dietaries or scale of living. Eighty individuals in 25 families were checked. There were 56 below the age of 18. No serious illness was found except one case of rheumatic heart disease with an advanced mitral lesion. Height and weight variations were not remarkable and there were no more underweight children in the families having low per person food expenditures than in the group as a whole. In only 6 cases were there badly infected tonsils. Only one child showed impetiginous skin lesions and no other skin infections were found. Two children showed evidence of early rickets of a mild nature by the presence of a rachitic rosary. In practically every instance the tissue turgor was good and the skin was in good condition. Dry, lusterless hair was rarely encountered. Hemoglobin estimations indicated that there was no evidence of anemia. This was in line with iron consumption. The lowest value, 11 gm., was found in an adult with known secondary anemia.

DENTAL DEFECTS

Only individuals under the age of 18 are included in the dental check. Of the 56 in this group, 17 showed no dental caries, whatever. There is no striking correlation between freedom from dental caries and high calcium intake. Neither is there a correlation between freedom from dental caries and high expenditure for food.

The findings of the British Medical

Research Council[7] indicate that the condition of the teeth is almost entirely dependent on the nutrition at the time of the development of the teeth and not on the diet following tooth development. Furthermore, the most important single nutritional factor is vitamin D, which has not been determined in this study. These considerations limit the conclusions that can be drawn from our present dental data.

CONCLUSIONS

There can be no question of the relation between diet and health where the diet is so poor as to result in well defined clinical deficiency disease. Students of nutrition, however, emphasize that good health is more than the absence of frank clinical disease and that an optimum diet is one of the essential conditions of good health. Our survey revealed a significantly large number of families subsisting on inadequate amounts of calcium, vitamin A and B_1. We might, therefore, have expected some evidence of sub-optimal health among these families. This was not found by any of the measures employed.

We do not wish to be interpreted as concluding that individuals receiving a sub-optimal diet according to present standards are not below par. We do wish to emphasize that this point remains to be clarified. To some extent this has already been done in the study referred to above[6] on the relation between vitamin B intake and chronic gastrointestinal malfunction. Is there any other evidence of ill health resulting from a sub-optimal diet? The scope of the clinical examinations in this study did not yield any such evidence.

We feel that a much more thorough and extensive analysis of the health of children and adults must be carried out over a number of years to determine how sub-optimal diet affects health. It is probable also that more refined measures of the below-par state than are now available will be necessary.

It should be emphasized that excepting for heavily depressed areas in this country we are not dealing with clinical nutrition deficiency disease to any significant degree, but in most urban communities in the United States with subclinical effects of a sub-optimal diet such as we have encountered in this study.

REFERENCES

1. Booher, Leila. Personal Communication.
2. Baker, Audrey Z., and Wright, Margaret D. *Proc. Roy. Soc. Med.*, 29:1145 (Mar.), 1936.
3. Baker, Audrey Z., and Wright, Margaret D. *Biochem. J.*, 32:2156, 1938.
4. Stiebeling, Hazel K., and Phipard, Esther F. Diets of Families of Employed Wage Earners and Clerical Workers in Cities. U. S. Department of Agriculture *Circular 507*, Jan., 1939.
5. Booher, Leila. Paper presented at the International Physiological Congress, Zurich, Switzerland, August 15 to 19, 1938.
6. Borsook, Henry, Dougherty, Paul, Gould, A. A., and Kremers, E. D. The Vitamin B Complex and Functional Chronic Gastro-Intestinal Malfunction: A Study of Two Hundred and Twenty-Seven Cases. *Am. J. Digest. Dis. & Nutrition*, V, No. 4:246–251 (June), 1938.
7. Final Report of the Committee for the Investigations of Dental Diseases (Assisted by Alan Deverall and Mabel Reynolds). The Influence of Diet on Caries in Children's Teeth. *Special Report Series, No. 211*, Privy Council, Medical Research Council, London, 1936.

Methods of Inoculating the Guinea Pig Through Various Channels*

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THE discussion has been limited to those methods most frequently used in the laboratory. No attempt has been made to suggest the preferred routes of inoculation for the various types of microörganisms, nor to describe the resultant pathology.

The technician who is not well acquainted with the anatomy of the guinea pig should dissect several cadavers in order to identify and locate the various organs.

Standardization of methods may be considered worth while by some to avoid possible criticism based on difference in the manner of inoculation, but different methods often produce the same result, as illustrated in surgery, where the surgeon may select one of several methods to perform the same operation.

The technics for the following methods are described, preceded by a section on asepsis, anesthesia and restraint:

1. Intracutaneous
2. Cutaneous
3. Subcutaneous
4. Intramuscular
5. Bloodstream inoculation
   a. Intravenous
   b. Intra-arterial
   c. Intracardial
6. Intracerebral
7. Intraspinal
8. Intraperitoneal
9. Intranasal
10. Intrapleural
11. Into the lungs
12. Intratracheal
13. Oral administration
14. Abdominal organs

ASEPSIS

All inoculations which require penetration of the skin should be made under aseptic precautions. Operators too frequently fail to recognize the importance of this fact with a subsequent miscarriage in their results as well as a loss in time and possible waste of animals.

The body hair at the site of injection or incision should be clipped, shaved, and disinfected. The shaved area is cleansed of surface scales and débris with a solution of 5 per cent acetone in 70 per cent ethyl alcohol, allowed to dry, and then painted with tincture of iodine, applied with a sterile swab, beginning in the center of the area, and with a circular motion working toward the periphery. The swab should not again touch the center. The iodine is allowed to act for at least 5 minutes. The area is disinfected upon completing the inoculation.

The sterilization of needles, syringes, surgical instruments, sponges, sutures, and other equipment is essential. For

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abdominal operations sterile rubber gloves should be worn. If possible, the operating chamber is wetted down to prevent dust from contaminating the wound. Apparatus accidentally contaminated during the operation must be discarded.

These directions will not be repeated in discussing the various methods, but are implied in all cases where applicable.

RESTRAINT

Though unusual, guinea pigs sometimes bite, especially when they are so restrained as to cause severe struggling. Caution must be observed in their their handling. To hold the guinea pig a pair of large pressure forceps such as are employed in small animal surgery to grasp the tongue are suitable. The grasping ends are fitted with serrated rubber pads which prevent slipping and pain. The guinea pig is grasped by the loose skin of the back over the shoulder region and may be maneuvered into any position desired.

For inoculations which require immobilization, the animal is fixed on a shallow metal tray or board in the dorsal or ventral position. A standard metal dissecting tray, 12 x 18 inches, serves the purpose well. The animal is placed on the tray and its legs fastened to the studs on each of the four corners with stout cord. For the ventral position, a piece of tape passed over its back and tied to either side of the tray will assist in reducing movement.

Special methods of restraint are described under the appropriate operations.

ANESTHESIA

Anesthesia is indicated whenever the injection is painful such as cardiac puncture, intraspinal and intracerebral inoculation. Local anesthesia is seldom used because of the ease with which a general anesthetic may be administered.

Ether inhalation is usually the most satisfactory method. Chloroform may be employed but its margin of safety is restricted. Intraperitoneal injections of the barbiturates such as nembutal and halatal while satisfactory produce longer unconsciousness than generally necessary. Their use is desirable for lengthy operations, especially when the technician is unassisted.

A suitable ether inhaler may be fashioned from an ordinary tin or cardboard mailing tube, large enough easily to accommodate the head and neck of the guinea pig. The closed end is perforated a number of times with a small nail. A pledget of cotton is lightly tamped against the perforations from the inside as an absorbent for the ether. The operator should assure himself that air can readily enter through the cotton, as otherwise the guinea pig will die from suffocation.

All preparatory procedures are completed before giving the anesthetic in order to limit the period of anesthesia. Careful observation will reduce fatalities to a minimum.

Eight to 10 cc. of ether for anesthesia are poured on the cotton in the inhaler. The guinea pig is placed on a table in the ventral position, grasped with the left hand around the body, and the inhaler placed over its head with the right hand. The animal should not be held so tightly as to interfere with the respiration. The duration of the first stage (excitement) varies from 20 to 40 seconds, succeeded by the second stage, anesthesia. As soon as the animal has ceased to struggle, lift it from the table and continue the anesthetic holding it in a dorsal position in the palm of the left hand with head slightly lowered, which permits better observation of the respiration.

Anesthesia is complete with the disappearance of the corneal reflex, determined by lightly touching the cornea with the tip of the finger and observing that the eyelids fail to twitch and the pupil has contracted.

An excessive amount of ether usually causes the guinea pig to twist its head and neck to one side followed by twitching of the hind legs as if it were attempting to scratch its ears, or it may simply exhibit a violent shaking of its head. The pupil will suddenly dilate. If this should occur the ether is immediately withdrawn, the animal grasped by its hind legs and slowly swung to and fro in a downward semicircle. If respiration ceases, artificial respiration is applied by rhythmically compressing the sides of the thorax with the thumb and forefinger. A pledget of cotton saturated with aromatic spirits of ammonia is placed near the nostrils.

It is a good policy to permit an intoxicated animal to recover completely and to select another. If this is impossible, at least give the pig a 30 minute respite before again attempting to administer the anesthetic.

The anesthesia will usually last long enough for most inoculation methods, but may be prolonged by occasional whiffs of ether.

After the animal regains consciousness, place in a cage, keep warm and free from drafts, otherwise, fatal pneumonias may result.

METHODS OF INOCULATION

1. *Intracutaneous*—Intracutaneous inoculations may be made in almost any region of the body but the skin of the abdomen is more adaptable. Immobilize the guinea pig in the dorsal position, clip, shave, and disinfect an area 1″ square in the middle of the abdomen. Use a small syringe with a 26 gauge, ¾″ hypodermic needle. Insert the needle ½″ beneath the epidermal layer with the beveled edge of the point uppermost, holding a fold of the skin between the thumb and forefinger of the left hand. If the needle is in proper position, its outline will be distinctly seen beneath the epidermis. The inoculum is injected as the needle is slowly withdrawn forming a bleb. Just before complete withdrawal, the injection is stopped, and the puncture sharply pinched with the fingers.

2. *Cutaneous*—The site selected is on the dorsal surface of the shoulder, where it is difficult for the pig to bite or scratch itself. Clip and shave, but antiseptics are contraindicated because of possible interference with the inoculation. Stretch and scarify with a sharp scalpel or razor blade. Remove excessive blood or serum, spread the inoculum over the area and rub into the abrasions with a glass rod. Depending upon the nature of the inoculum, the surface may or may not be covered with gauze bandage.

3. *Subcutaneous* — The areas most adaptable are those over the right and left lateral surfaces of the thoracic cavity.

Just posterior to the elbow, the skin is picked up between the thumb and forefinger and drawn away from the body. The needle is inserted into the pocket formed, the inoculum is slowly injected, the needle quickly withdrawn, and the entrance point pinched to prevent leakage.

It is unwise to inject more than 2 cc. at one point as absorption is retarded and abscess from pressure necrosis may occur. The area is gently massaged to distribute the inoculum. If necessary the opposite side may be utilized.

Material to be inoculated should approximate the temperature of the body.

4. *Intramuscular*—The inner muscles of the thighs are selected due to their size.

The thigh is grasped with the thumb and forefinger and the muscles rotated to the inside. A 20 gauge, 1″ hypodermic needle is large enough unless the inoculum is a particularly heavy tissue suspension. The needle is inserted obliquely through the skin and

into the muscle for ½", and the inoculum deposited as the needle is slowly withdrawn. Sudden pressure on the plunger must be avoided to prevent rupturing the fascial coverings of the muscle. If it is necessary to inject more than 1 cc., the opposite thigh should be used.

5. *Bloodstream*—Due to the lack of adequate superficial vessels, this inoculation is rather difficult unless made directly into the heart. Intracardial injection is not complicated, and with a little practice proficiency may be readily attained. If the inoculation must be made into a vein or artery, the right jugular and carotid are the vessels of choice, since those on the left lie in intimate contact with the esophagus. The exposure and isolation of the jugular vein or carotid artery are quite simple, but due to their small size and fragility care must be exercised in injecting them to prevent their rupture.

a. *Intravenous*—The guinea pig is fixed in dorsal position with the head and neck fully extended by a small cord or copper wire looped around the upper incisor teeth and fastened to a stud on the operating tray. Avoid flattening the nostrils against the tray, thereby suffocating the animal. General anesthesia is required.

The right external jugular vein lies beneath a line extending from a point midway between the point of the shoulder and the sternum, to the angle of the jaw. The skin should be incised longitudinally for 1" just medial to this line. Forceps are attached to the skin flaps and laid over to reveal the underlying structures. The cellular tissues should be dissected with a grooved director, exposing the jugular vein, which is isolated by placing a probe beneath it. Use a 26 gauge, 1" curved shank hypodermic needle. The point should be sharp and free from "fish hooks" which tear the wall of the vein as the needle is extracted. The injection is made in the direction of the flow of the blood.

Allow the needle to remain in the vein for several seconds until sure that the inoculum has been carried away with the bloodstream, then withdraw quickly and close the skin incision with interrupted silk sutures. If irritant antiseptics come in contact with the vein or its surrounding tissues, severe phlebitis may result.

b. *Intra-Arterial*—The guinea pig is prepared as for the intravenous inoculation.

The right carotid artery lies adjacent to the right lateral surface of the trachea in the middle third of the neck region. It is not seen when the jugular vein is exposed because a strip of muscle is interposed between the two. It is in a fibrous sheath with the internal jugular vein, the vagus and sympathetic nerves.

A longitudinal incision is made just to the right of the trachea and the skin flaps held aside with forceps. The aponeurosis connecting the two sterno-mastoid muscles which overlie the artery are carefully divided with a grooved director, to prevent injury to the artery and nerves. The cellular tissue along the trachea is bluntly dissected, the right sterno-mastoid muscle pulled aside, and the sheath containing the artery will be revealed. The sheath is carefully opened and the artery isolated by placing a probe beneath it.

The injection is made with the same type and caliber hypodermic needle as for the intravenous operation; however, the insertion is made in the direction of the head instead of the heart, and the bloodstream permitted to carry away the inoculum before the needle is withdrawn. The skin incision is closed with interrupted silk sutures.

c. *Intracardial*—This is the preferred method for bloodstream inoculation because of the ease with which it may be done and the elimination of skin in-

cision. The technic is identical with that for bleeding the guinea pig for complement except that an injection is made.

The animal is fixed in the dorsal position, a small area over the left side of the thorax is clipped, shaved, and disinfected. A 19 gauge, 1½" hypodermic needle is used. General anesthesia is necessary.

The site for insertion of the needle is the point in the left chest wall where the heart beat is most strongly felt, usually between the 3rd and 4th ribs. The apex is brought further to the left side by pressing slightly inward on the right ribs. The needle is inserted downward, slanting somewhat toward the middle line for approximately ½", which should place it in the ventricle. The needle is held between the thumb and middle finger of the right hand, the forefinger pushing downward on the hub. Entrance is shown by a flow of blood from the needle. The loaded syringe is attached, the inoculum injected, and the needle quickly withdrawn.

6. *Intracerebral*—The site for injection into the cerebrum is found by drawing an imaginary line from each ear to the opposite eye and noting the intersection of the lines. The exact location for puncture of the bony plate is a point ⅛" above the intersection and 3/16" to the right or left of the median line. At this point the cerebrum is at its greatest depth, and by going slightly to one side of the median line, the longitudinal fissure is avoided. The pig's scalp should be clipped, shaved and disinfected. General anesthesia is necessary.

Place the animal on a table grasping it with the left hand so that the palm is resting on its back and with the thumb and forefinger steady its head. A quarter inch incision through the skin and subcutaneous tissue is made parallel to the median line and to one side of the point selected for puncturing the skull, so that when the injection has been completed, the skin will move over and cover the trephine opening. Hemorrhage from the incision must be controlled before trephining.

An excellent trephine may be made from an awl by filing the end into a sharp, three-sided point. A blood lancet with a screw guarded stab is also suitable. Place on the selected point of puncture, apply slight pressure, and rotate the trephine between the fingers. Just before the bone is penetrated, a slight "give" will be felt, an indication to proceed cautiously to avoid injuring the meninges. When the puncture is complete the dura mater will be seen. A 25 gauge, ½" needle attached to a syringe is inserted vertically through the opening and into the brain tissue for ¼". The injection must be made slowly with a minimum of pressure on the plunger. From 0.1 to 0.2 cc. may be injected without appreciable damage to the brain tissue. The needle is withdrawn and the skin allowed to resume its normal position. Silk sutures may be used, but, as a rule, pinching the lips of the wound together and covering it with collodion will suffice.

Some operators prefer a small electric drill with a dental burr as a trephine, but there is more danger that the meninges and brain may be damaged.

7. *Intraspinal*—The intraspinal inoculation is not difficult provided the operator has acquainted himself with the regional anatomy by dissection of cadavers. The injection is made by puncture between the laminae of the last two lumbar vertebrae. The cauda equina is found in this section of the canal.

An area 2" long and 1" wide over the lumbo-sacral region, is clipped, shaved, and disinfected. General anesthesia is necessary.

Grasp the pig by its hind legs with

the left hand, permitting the body to hang over the knuckles. This position produces a maximum separation between the spinous processes of the vertebrae. Locate the points of the hips with the thumb and forefinger of the right hand, bring them together slightly in the rear of the hip line to determine the sacro-iliac joint. Using the forefinger alone, the location of the spinous process of the first sacral vertebra is established. The forefinger is then moved forward along the vertebral column where it will first encounter the depression at the lumbo-sacral articulation and next the tip of the spinous process of the last lumbar vertebra. With the finger nail, the space between the last two lumbar vertebrae is marked in the skin. It is essential to remember that the spinous processes of these vertebrae extend upward and forward at a 45° angle.

A 24 gauge, 1″ hypodermic needle is used. The point is inserted vertically under the skin at the mark indented with the finger nail. By carefully manipulating the point, the limits of the spinous process of the last lumbar vertebra may be outlined by the needle, which is then passed downward and backward at an angle of 45° along the anterior border of this process until it penetrates the small space between the articular processes of the last two lumbar vertebrae and enters the spinal canal. As the needle penetrates the canal and touches the cauda equina, the operator will note a sudden twitch of the guinea pig's hind legs. After a few drops of spinal fluid have been permitted to flow from the needle, showing that it is in proper position, the syringe is attached and the inoculum injected. Not more than 0.5 cc. should be inoculated into the spinal canal of the average guinea pig weighing 500 gm.

8. *Intraperitoneal*—The preferred site is a point 1″ anterior to either of the mammary glands and midway between the gland and the median line. The pig should be fixed on a tray in dorsal position or held in this position by an assistant. An area 1″ square is clipped, shaved, and disinfected. The injection is made with a 19 gauge, 1½″ hypodermic needle.

The skin and abdominal muscles are picked up between the thumb and forefinger of the left hand, the needle inserted ½″ through the base of this fold into the peritoneal cavity, and the injection made. As the needle is withdrawn the puncture is pinched to prevent leakage. By lifting the skin and muscles the needle enters parallel to the long axis of the body and penetration of the abdominal organs is avoided.

9. *Intranasal*—Put pig upright in a mailing tube with the head and neck exposed. The operator can control the animal with one hand while instilling material into the nostrils with the other. The inoculum should be fluid and sprayed into the nasal passages with a small atomizer which can be fitted flush against the nares. The opposite nostril is closed by pressing it against the nasal septum.

10. *Intrapleural*—The major problem here is to inject the pleural cavity without penetrating the lung.

Fix pig in dorsal position. A small area over the right side of the thorax, which will include the 5th intercostal space, is clipped, shaved, and disinfected. General anesthesia is necessary.

The skin and subcutaneous tissue is incised at the sternum and continuing along the 5th intercostal space for ¾″. The injection is made with a blunt pointed, 20 gauge hypodermic needle which is perforated laterally, inserted obliquely through the intercostal muscles and parietal pleura. As it enters the pleural cavity, the blunt point of the needle will push the visceral pleura and lungs before it, creating a space into which the inoculum is deposited

through its lateral perforations. The needle is quickly withdrawn and the incision closed with interrupted silk sutures.

11. *Into the Lungs*—The preparation and location for this inoculation is the same as for the intrapleural except for the skin incision which is unnecessary. A sharp pointed, 24 gauge, ½" hypodermic needle is passed at right angles through the 5th intercostal space at a point midway between the sternum and the neck of the ribs, into the thoracic cavity. An insertion of 5/16" will insure its penetration of the lung tissue.

12. *Intratracheal*—It is very difficult to inject material into the respiratory tract and localize it at a given point. If an infective substance is injected into the nasal passages, in all probability some of it will also reach the lungs. Conversely, injections made into the trachea intended for the lower respiratory tract may readily be coughed up and infect the upper. However, an intratracheal injection is more sure to reach the bronchi than one from the upper passages.

The guinea pig is fixed in the dorsal position with the head and neck extended as for an intravenous inoculation. The throat region is clipped, shaved, and disinfected. General anesthesia is necessary.

An incision of 1" is made through the skin and subcutaneous tissue along the median line of the ventral surface of the neck. The skin flaps are retracted with forceps. The trachea is exposed by bluntly dissecting the cellular and muscular tissues which cover it. Care must be exercised not to injure the major blood vessels and nerves which lie in close proximity. A syringe with a 24 gauge, ¼" hypodermic needle, is used. Insert needle between tracheal rings. At the moment of injection the animal's body should be inclined upward at an angle of 45° to facilitate passage of the inoculum into the bronchi. Only a few drops may be injected or the guinea pig will suffocate. The incision is closed with interrupted silk sutures.

13. *Oral Administration*—Various substances may be given by rubbing them inside the cheeks or pipetting small quantities into the mouth. However, the surest means of reaching the digestive tract is to deposit the material directly into the stomach. This is accomplished by means of a small, soft rubber male catheter. The pig is restrained by placing it upright in a cylindrical mailing case small enough to restrict its movements adequately with head and neck exposed. The animal's jaws are held apart by an assistant with a rubber band placed around the upper jaw and one around the lower to prevent biting the tube. If unassisted, a small piece of wood, with a hole bored through its center for the tube, is placed in the animal's mouth and held in position with the left hand which encircles the head. With the right hand, the tube is passed through the hole and along the soft palate until it reaches the esophageal orifice. At this point it is vibrated against the epiglottis to cause the animal to swallow and then passed down the esophagus into the stomach. The material is forced through the tube with a hypodermic syringe. However, before the injection is made, the tube should be allowed to remain in position for 30 seconds and if the animal's respiratory movements continue to be regular and there is no coughing, the operator is assured that the tube has passed into the stomach and not into the lungs—4 to 5" of tube are required to reach the stomach from the entrance of the mouth.

14. *Abdominal Organs*—All organs which lie within the abdominal cavity must be injected through an incision in the wall unless they are provided with external openings. A detailed description of their location would exceed the limitations of this paper and would

be secondary in value to the information which the technician might and should obtain through actual dissection of the cadaver. The technic of inoculating the various organs may be included with the following suggestions:

a. A preliminary laporotomy is always indicated. No attempt should ever be made to inject an organ by inserting a needle through the skin and hoping to contact it.

b. The abdominal incision should be large enough for easy identification and manipulation of the organ involved.

c. The location of the laporotomy must be varied to suit the location of the various organs.

d. The operations must be performed with due regard to asepsis to prevent complication of results through accidentally introduced infections.

e. Food and water should be withheld from the guinea pig 24 hours prior to the time of operation to facilitate the manipulation of intestines.

f. General anesthesia is always indicated.

Housing: Your Problem and Ours*

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NEITHER on the first occasion when as a health officer and guest of your Public Health Service, I visited America, nor on the last, when I came as a delegate to the Annual Conference at Montreal, did I hear much talk of housing; nor had I demonstrated to me anything of the conditions under which the people of the class—the lower wage earning class—among whom my own work lay in London, live. Even at my first visit sixteen years ago, I made note in various parts of the country of conditions that appeared to me to warrant the belief that there was a housing problem. I noted also that if its existence had not then been recognized by the health authorities there would surely come a time when they would be compelled to recognize it, and take steps to deal with it.

That I should have noted these conditions and felt as I did with regard to them, was not strange. I came from a country in many parts of which bad housing conditions were commonplace and inescapable by the health workers. From the earliest days of my association with public health, as a student even, I had been aware of the existence of defects in housing; had seen the staffs of the various health departments with which I was connected devoting endless days to attempts to find remedies for irremediable conditions; bombarding landlords with orders to carry out repairs; dragging the recalcitrants before the courts in order that they might be punished for failing to apply further patches to premises already a collection of patches.

In the talk, private and public, of health officers, the word "slum" eternally recurred and the search for the cause of this or that almost inevitably led to housing conditions, and the solution of every public health problem depended in the first instance on a solution of the housing problem; but of all the health problems there was none so consistently evaded as that connected with housing. Of reasons for evasion there were multitudes; and of means and methods of evasion almost as many.

Actually, the question was one of responsibility, affecting the shoulders upon which the burden should be laid—those of the owners of the property, the "slum landlords"—or the general body of ratepayers and taxpayers, through the local and national governing bodies and exchequer. The aim at the beginning, if not indeed most of the time, was to avoid shouldering responsibility. Continually they were maneuvering, each side seeking opportunity to—if I may borrow your very expressive word—outsmart the other. Probably they recognized it, but always it was a losing fight in which the private and individual property owners were engaged.

Inevitably the governing bodies must

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win. The last move was always theirs, and even though they might make concessions, they were always the least they could make. Always such concessions as they made were accompanied by a slight tightening of the screw. In order to stop progress, to secure the maximum of concession and the minimum of twist to the screw, there were all sorts of banding together of property owners. Also there was always present in every local governing body a very considerable number of individuals whose whole object in seeking election and whose sole aim was to protect their own interests and those of other owners of low grade property.

To health officers in particular, these organizations and individuals proved highly troublesome. In some cases simply a thorn in the flesh, in others they were more than a mere irritant, their weapons used against the unfortunate health workers being so strong and so barbed that the struggle became useless. This was all the more definitely the case, since the only weapon at the disposal of the officers was a collection of laws largely made by those who were against them. As the bulk of the powers given in the laws were placed for administration in the hands, not of the officers, but of the local governing bodies, the chances that great activity would be shown were few. Even the few powers that were given to the officers in the more difficult areas, they dared not use, in spite of the fact that, because the law had given them what is called "security of tenure," they appeared to be in a very strong position. Any action though so provided for in the legislation that it seemed to be compulsory, was doomed to failure. No action, therefore, was taken and all that was left was talk, and talk by health officers with regard to housing was endless.

Though approving for propaganda purposes statements such as those that follow, taken from the Ministry of Health brochure *About Housing*, I would never pretend that they would come through any properly applied scientific or statistical examination, having regard particularly to the result of the investigation carried out by the late Dr. M'Gonigle, of Stockton-on-Tees. This revealed quite definitely that there was, if anything, a worsening in the condition of the families transferred from slums to new dwellings, and that most who remained behind in the slum areas fared better, from the health point of view, than those who were transferred. These results raised doubts of the accuracy of statements made in *About Housing* to the effect that—

> . . . the evil effect of bad housing tell not only on the individual, but also on the general welfare of the community, and are to be found in many fields of public health. In districts where housing standards have always been low and where overcrowding is rife, the incidence of tuberculosis and of infant and maternal mortality is almost invariably higher than the average, sometimes very much higher.

Almost invariably discussions initiated by health officers upon housing ended in a decision that the problem was economic mainly and only finance could solve it.

The people who lived under deplorable conditions in the defective dwellings did so because they could not afford anything better. If they were to be better housed, it would have to be largely at somebody else's expense: "and I," said the property owner, "am not prepared to play the part of a public benefactor": "and we," said the local authorities, "cannot, because the law will not allow us." This, at the time, was actually the case; and the officers who complained of the inadequacies of the law were right in doing so. The law was inadequate very largely because at the time it was made there was still a strong belief that an owner of property had rights, almost divine

and inalienable, and that one of the aims of any law must be to protect these rights.

The people who administered them—the local government bodies particularly, since they contained more than a sprinkling of property owners—were ardent believers also. It is quite a considerable time since laws of the kind I have in mind and that my predecessors inveighed against, operated. It is useless, therefore, to say more with regard to them than that though they provided for closure and demolition of unfit dwellings, for clearing away of slums and their replacement by houses fit for humans to live in, and even for the erection of such premises independently of slum clearance, the procedure was so unbelievably, almost ludicrously, complicated, as to discourage any except the bravest and most progressive of authorities and officers. Moreover, though the law sought to tighten the financial burden that was to be laid upon the ratepayers in the places where slums were cleared, and houses for the less fortunate and the more poorly paid inhabitants erected, the terms offered were so ungenerous as to be definitely discouraging.

Generally, in fact, local authorities refused to have anything to do with slum clearance and the provision of municipal dwellings. Even though it was clearly imposed upon medical officers of health as a duty that they should condemn and make representation of slum areas, the duty was neglected. Local authorities, who on receiving a representation from a health officer, were required to take steps to see that the offending area was cleared, were given nothing of the kind to do. Everybody was content to proceed as if there were no special housing and slum clearance provisions, trying to get as many new houses as possible erected by private enterprise, and stimulating and compelling owners of existing poor class property to patch and prop it up as well as possible.

In some quarters attempts were made to have the law amended and simplified and to secure terms more generous. Many of these attempts were successful, and from time to time legislation that did offer encouragement to take action was enacted. Progress was slow, however, and quite an appreciable period elapsed before local authorities really grasped that no matter how loudly they might declare that they were not their poorer brothers' housemakers, were not public benefactors so far as the housing of particular sections of the population was concerned, they were in fact responsible and must accept responsibility on behalf of the ratepayers and taxpayers for providing housing accommodation for the lower paid workers. That it could not be left to private enterprise was obvious, since reasonable and economic rents from the persons to be housed were not obtainable.

Even voluntary organizations, the so-called housing associations, could not be expected to provide the amount of accommodation needed, the funds at their disposal being entirely inadequate. In regard to voluntary associations, though with us there is much talk of the amount of housing they do, in comparison with local authorities, their contribution is insignificant. This, of course, is as it should be, the responsibility being upon the authorities, not only legally imposed by Act of Parliament, but morally as well. In all probability it was the war—that of 1914-1918—that brought realizations of their responsibilities to the local authorities, or some of them at least.

One thing that war did reveal was the existence of an alarming shortage of housing accommodation. Not alone to the authorities was this revealed. The men returning from the various fronts discovered it. Promised homes

fit for heroes to live in, being heroes, they were surprised there were practically no homes of any kind for a great many of them, particularly if they desired, as so many of them did, to marry and settle down. Why they should have been surprised to find a housing shortage is difficult to understand. Naturally, during the four years of the war house building was entirely at a standstill.

Not only was there no house building between 1914 and 1918, but in many of the years before that the amount of house building of the necessary kind was the very minimum. For this, the policy in relation to taxation was blamed. In any case, during the twenty years before the war, the number of houses built year by year gradually diminished, the total number being something under 2,000,000 For all of these private enterprise was responsible, and for economic reasons it did little or nothing for the lower wage earner. During the twenty years since the war —in spite of the fact that for at least four years, 1919-1923, the building industry was disorganized—over 4,000,000 houses have been built.

As showing the extent to which local authorities have come to accept responsibility in this matter of housing provision, note that of the 4,000,000, they built 1,000,000, private enterprise providing the remaining 3,000,000, most of them no doubt for occupation by persons able to pay a reasonable purchase price or an economic rent. Of the 4,000,000 post-war houses, about 1,500,000 were built with moneys partly derived from public funds. Of these 1,500,000 houses, 1,000,000 have been built by local authorities and 500,000 by private enterprise.

It is in this matter of financial assistance for house building purposes that the greatest change in the British housing policy has taken place. It was because, in fact, of the determination to afford financial assistance and the introduction of legislation providing for it, that the way to a solution of the housing problem in Great Britain was opened up: that, in effect, there ceased to be a housing problem or, at any rate, a housing problem so hopeless as at one time it appeared to be. The change in the point of view and the determination to go ahead and provide housing, no matter what it might cost, did not take place all at once. A great deal of propaganda had to be carried on among local authorities and the public as well. This was natural, having regard to the fact that expenditure that was vast and might well be continuous for a long period had to be faced. What is called the "national conscience," however, was in course of time aroused, and all the necessary laws were passed and sums raised and provided.

Actually the amount of legislation passed is very large. Also it is very complicated, since there is involved so much interference with the owners and the ownership of property and the rights thereof, which the legal profession is determined shall not too lightly —or inexpensively—be violated. Just how many laws there are, and the extent of their complications, I need not say. Nor is it necessary for me to dwell upon the amount of trouble and worry they cause the health officers, medical and other, both in and out of the witness chair.

As to the expenditure involved and provided for in the legislation, it is learned from the report of the Ministry of Health for 1937-1938, that between 1919 and 1938 this totalled something like 3,200 million dollars (795 millions sterling). The total annual contribution from public funds toward the provision of housing accommodation and the solution of the housing problem is over 76 million dollars (19 millions sterling).

A great part of these colossal sums—

colossal because the population to be dealt with is not very large and the amount of housing (about 12,000,000 houses) not great when compared with the United States—has gone, and goes, on slum clearance and the provision of dwellings to take the place of the slum property destroyed. Actually up to the time war broke out again, throughout the country the slums were being cleared at the rate of more than 1,000 people every day. More recently, expenditure has had to be incurred and anticipated on account of placing upon the authorities the responsibility of getting rid of overcrowding.

Of all the problems connected with housing, so far as the health officer is concerned, none has proved more troublesome than that of overcrowding. Always in the Public Health Acts powers for dealing with it were provided. The difficulty, however, was to put them into operation, largely because there was nowhere for the overcrowded families to go, even if they could—as they generally could not—afford to pay for the accommodation.

In relation to overcrowding, the "national conscience" was strongly roused some two or three years ago. Why and how nobody seemed to know. Actually it constituted something of a triumph for propaganda. One day we health officers were plodding along trying to get rid of overcrowding with the powers we had long possessed; and the next we found ourselves relieved of a burden and all set for a solution that was to be complete and lasting. Perhaps it was not quite so simple as that. Actually what was done—and undoubtedly propaganda and publicity had much to do with it—was to make a law with regard to the amount of space that must be provided per person in a house and to require local authorities to make a survey of their districts in order to discover the number of persons living under over-crowded conditions, that is to say, in houses in which there was less than the standard amount of space; and to discover also how much extra accommodation was required to obviate the overcrowding. In addition, provision was also made for the punishment of persons who lived under overcrowded conditions after the additional accommodation had been provided. As a result of the surveys it has been discovered that in England and Wales there are about 430,000 unfit houses and some 340,000 overcrowded houses. To meet all needs it has been estimated that in order to complete the present program some 600,000 houses will be required. About half this number had been provided before the outbreak of war, and if the activity could have been continued not only the slum, but the overcrowding problem also, would have been solved within five years; and in the words of the Minister of Health we should have seen established "in new and healthy homes about 3,000,000 men, women, and children, who have been living in unfit or overcrowded homes."

This task never will be completed without a continuance of public interest and the expenditure of money from rates and taxes. So far as expenditure is concerned, originally it was anticipated that, annually, for about forty years, there would be required about 3½ million pounds sterling—say 15 million dollars. The charge already borne since the Armistice of 1918 is round about 1,250 million dollars (250 millions sterling). So far as continuance of public interest is concerned, no doubt as in the past this will be brought about by the publication, each year in the annual report of each medical officer of health in the country, of facts and figures relating to housing, the number of inspections made, of houses condemned for destruction, of slums cleared, of houses erected, and so on; by the publication monthly of facts

and figures relating to housing by the Ministry of Health; by the publication from time to time of special books, booklets, and pamphlets of the type of the brochure *About Housing,* already mentioned, and the most attractive volume which is rather like your *Healthful Housing,* called "Houses We Live In." The price of this is 1 shilling (about 25 cents), *About Housing* being cheaper. Both have sold extremely well.

I am very conscious of the inadequacies of this paper. Very definitely, I fear that it contains little that can be regarded as a contribution to the knowledge you in the United States already possess with regard to the housing problem. It does show—if anything—that the problem of housing is basically economic; that in order to solve it, private enterprise and the public bodies must coöperate, the latter accepting responsibility and rendering such financial assistance out of the public funds as appears necessary. Finally, with the object of insuring that the people shall be kept continually aware, not only of the needs, but of the steps taken to meet them, every effort should be made to educate them; and there should be the widest publicity and the fullest possible resort to propaganda.

Development of a Health Education Program*

Navajo Indians

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A PRESENTATION of some practical procedures in the development of a health education program, drawn from experiences with a group of American Indians, the Navajos, may be of interest to those concerned with child health. These experiences are significant because, in dealing with primitive people, it is necessary to disregard everything but the most basic fundamentals and, therefore, needs and relationships are more clearly perceived than in programs dealing with a more complex culture.

In northern New Mexico and Arizona live some 45,000 members of the Navajo tribe. They are nomadic people, living in isolation, tending their flocks on the desert, and retaining the habits and customs that have persisted among them for many generations. While, to a large degree, untouched by modern civilization in ways of thinking and living, physical changes in their environment have inevitably crept in. Health problems for them grow in large measure out of the fact that satisfactory adjustments to these changes have not been made. New foods, highly refined and hence impoverished, are now being sold in every trading post. Substituted for the natural foods formerly eaten, their use contributes to malnutrition and dental caries. Automobiles and improved roads are bringing closer contact among family units on the reservation, facilitating the spread of communicable diseases and increasing the need for modern methods of sanitation to control this.

Cultural factors also contribute to the health problems here. The people, for example, believe that disease is caused by the violation of some taboo, by getting out of harmony with the universe, by the wandering away of the patient's soul, or by the entrance of some foreign object into the body. To correct these maladjustments they have a firm conviction that the medicine man or "chanter" by an appropriate ceremony or "sing" can charm the foreign object out, atone for the broken taboo, or bring back the wandering spirit. They have no real concept of the germ theory of disease and the sanitary practices this involves. The Navajo language does not, in fact, contain any word for "germ."

Lack of health knowledge and skills, particularly in regard to the care of infants and children is another factor contributing to high morbidity and mortality rates. Medical and nursing

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services and hospital care are not understood or generally accepted, although these are available in the area.

It is obvious that under the circumstances described no health program can function effectively without education. It would be difficult to find a situation where the need of health education is more clearly indicated. However, these conditions are not peculiar to Navajos alone. Similar problems will be met in any community, white or Indian, rural or urban, where ignorance persists and people lack scientific knowledge concerning health.

In 1937 when the medical and nursing personnel of the Navajo area met with their medical director to discuss plans and policies for carrying on the health program, they extended an invitation to leaders in Navajo education to join the conference. This was done because the medical, as well as the educational group, recognized that while schools provide excellent opportunities for general health education and specific instruction in home nursing, infant care, and first aid, all of which help to make the health service program more effective, collaboration of education and health personnel in the development of the health education program is essential to its soundness. A program prepared without such collaboration is often justly criticised by the medical group because the subject matter is unwisely chosen, giving false impressions, if not itself actually false. On the other hand, all too frequently a health teaching program planned by the health personnel and hence basically sound is unsuited to the age and interests of the children concerned and the methods of presentation are in disagreement with modern educational procedures being used elsewhere in the school.

To avoid such difficulties and provide adequately for the health education needs of the Navajos, a Joint Health Education Committee was formed. Its membership included the director of schools, school supervisors, and a classroom teacher, the medical directors for the area and for the district, a hospital physician, and a public health nurse. The function of the committee was to formulate general policies for the health education program, to determine the respective responsibilities of medical and teaching personnel in carrying it out, and to indicate its general content.

In discharging its functions, the task of formulating detailed plans, preparing materials, and suggesting methods was referred to sub-committees. These sub-committees worked under the leadership of a health educator who was available in the area for a few months. They were composed of classroom teachers, public health nurses, and home economics teachers, who were close to the actual problems in the field. A physician was appointed to each subcommittee to give technical assistance in the selection of subject matter suited to the needs of the Navajos.

The use of these working committees made it possible for the Joint Health Education Committee to accomplish its purpose with a minimum of actual time expended, holding only three all day sessions at intervals of several months apart. This is an important factor to consider in working with people who have administrative and supervisory responsibilities and whose time is necessarily limited.

The merits of this procedure in joint planning were twofold. First, the program prepared was acceptable to both educational and health authorities and hence supported by them. The medical group safeguarded the technical aspects and guided the choice of content in accordance with observed needs, while the educational group assisted in the selection of teaching activities suited to the abilities of those to be taught and suggested methods in accord with present-day educational policies. Second,

the health problems of the area were clearly defined, and agreement was reached as to the points upon which educational effort should center.

The Joint Health Education Committee limited its proposed health education program for the Navajo schools to three basic problems, viz., the control of communicable diseases, the control of infant mortality and morbidity, and first aid and safety. It suggested activities for the school which would contribute most effectively to the solution of these problems. Arrangements were made for the trial use of this material in a limited area under supervision. After final revision by the Joint Health Education Committee, it was mimeographed and distributed to the field where its use was encouraged by the medical and educational directors and their supervisors.

Certain factors in Navajo life were given special consideration by the Joint Health Education Committee when organizing its policies and plans in the belief that the development of an effective program requires attention to the distinctive features of the group involved. While the following statements were regarded as peculiarly characteristic of the Navajo area, elements of the same situations may be found in almost any group of people and should be recognized in program planning.

1. *The largest group of children available for instruction is that which comes to day school, where attendance is irregular, language handicaps exist, and children leave school at an early age.* Education in health must be planned to reach this group under these conditions. Many things which are considered desirable in a health education program must, perforce, be omitted and attention focused on the factors which are most vitally significant in the welfare of these people.

For the day school group the activities suggested to meet the basic problems of communicable disease control, infant mortality, and first aid and safety are: (1) establishing correct health practices in connection with daily living at school; (2) developing a friendly feeling toward the personnel of the medical staff and an appreciation of the value of the services of the doctor, the nurse, and the dentist; (3) demonstrating the presence of microscopic life and explaining its significance in sanitary practices; (4) teaching facts about trachoma and tuberculosis (the two outstanding communicable diseases in the area) and their prevention and control; (5) teaching infant care suitable for young children who help care for babies at home; and (6) teaching simple first aid in connection with situations which arise at school.

Because of the daily contact between school and home there is a possibility that this health education will influence the adult as well as the child and therefore bring improvements in home practices. It was, however, agreed that the education of the adult is the responsibility of the medical and nursing group, to be carried out in hospital, clinic, and field in connection with giving health services.

2. *The Navajo, as is true with many other people, does not readily change his ways of living and must himself recognize the desirability of any change before it is accepted.* The committee believed that the task of education is to help the Navajo to solve his own problems in his own way by giving him practical demonstrations in the day school and allowing him to make his own adaptations. It is suggested that the school, which provides facilities and instruction in bathing, laundering, cooking, sewing, and blacksmithing, plan its program of activities as nearly on the level of hogan life as possible so that the routine practices in daily living at the school will seem desirable because within reach of the hogan.

This policy of giving instruction on a basis in keeping with the background of the people who will use it is also followed in the secondary boarding school program.

3. *The Navajo has no knowledge of bacterial life and does not understand the procedures advocated for communicable disease control.* No one can be forced to accept scientific ideas regarding disease and its prevention. The Indian is not different from the white man in this. Educated men in the day of Koch, and Lister, and Pasteur required much demonstration and proof before they accepted the germ theory of disease and the technic of asepsis. Even in the present generation instances can be cited of groups of people who failed to accept modern methods for the control of malaria, of hookworm, and of pellagra until an educational program made clear the value of these. The Joint Health Education Committee for the Navajo area agreed that adequate explanation of the causes of disease and methods of control must be made if the Navajos are to accept modern procedures for protecting themselves from communicable disease.

One of the most significant features of the health education program for the Navajo group is the attention given to this instruction. It has been found to be feasible and desirable to build up concepts in the minds of Navajo children, as well as adults, which will help them to understand the reasons why sanitary practices are advocated. This is done through the laboratory approach, beginning very early in school life. The idea of disease germs is presented only after a background of knowledge of microscopic life has been laid. The instructions are concrete and visual rather than abstract theory.

The principle of magnifying familiar objects through the use of a hand lens is first taught. Later the compound microscope and small forms of life such as protozoa and algae are demonstrated. The fact that boiling and sunlight and drying destroy such life is demonstrated. This is followed by the preparation of "germ gardens" using the simple equipment available in any home or school. The development of bacterial colonies from the feet of a fly, from droplets in coughs or sneezes, from fingerprints, and dust is shown.

After this preliminary work the children are ready for a simple explanation of the fact that certain germs cause certain diseases, and that these diseases can be prevented if the particular germs do not enter the body. They learn too, that the germs of a disease always come from a case of the disease. This paves the way for the discussion of a new term, "dangerous dirt" referring to any discharge from the body (since it is not always possible to know whether disease germs are present or not). The desirability of sanitary practices with reference to any body discharge is readily agreed upon after this practical explanation. Incidentally, it has been found useful to distinguish between "dangerous dirt" and "clean dirt" in this land where water is at a premium and there is no social value attached to cleanliness as such.

4. *The Navajo father as well as the mother exercises control over the activities of family life and needs preparation for this responsibility.* In planning the health education program, efforts were made to provide certain basic instruction in health for boys as well as girls. Special recognition was given to the fact that boys need to understand the fundamental requirements in infant care and in home care of the sick even though they may not be expected to acquire special skills in these. A group of young Navajo women expressed the need thus, "Even though we know the care the mother and baby should have, it will do us no good if our men do not understand it, too!"

5. *Children in the home are often caretakers of babies and have considerable responsibility.* The Joint Health Education Committee was able to suggest simple instruction which can be given to very young children. This dealt chiefly with cleanliness and choice of foods suitable for the baby. The material is used in connection with the development of a vocabulary and in the routine teaching of reading.

Since infant death rates are high in the area an outline was prepared giving the simple essentials in infant and maternal care which the physicians felt might help to improve this situation if taught in the home-making classes in school. The suggestions in this outline are very practical, based on the needs of the Navajo home. The Joint Committee recommended that instruction be given on the basis of actual care of a baby in the school, and in a number of instances it has been possible to arrange for this. Boys as well as girls are given an opportunity to assume some responsibility for the child. Teaching and health personnel share the responsibility for supervising this project. The monthly check-up of the child by the physician is giving these young people an appreciation of the help that the medical profession can give in safeguarding child life and will, it is believed, in time make it possible for the area to inaugurate a program of well baby conferences. (These are at present not possible because not supported by the people.)

6. *Medical and nursing and hospital care are not generally understood and accepted by the Navajo people.* The program planned suggests that special attention be given to encouraging friendly relationships between the professional group and the children. Outstanding members of the medical group have recognized that much of the success of this activity depends upon the effort the doctors make to establish confidence and they are coöperating with the teachers to that end. On the recommendation of the Joint Committee arrangements have been made in many instances to take groups of school children to visit the hospital in order that some of the fear of hospitals and doctors, which is in part due to unfamiliarity, may be overcome. In the celebration of Hospital Day hundreds of Navajos were brought to the twelve hospitals of the area for the same purpose.

When the new base hospital was completed the medical director invited the leading Navajo medicine men to participate in its dedication, recognizing the fact that they are the spiritual leaders of their people. "In a most impressive manner they scattered cornmeal and pollen to the four points of the compass and chanted their songs and prayers while standing on a ceremonial robe." This was an important step toward acceptance of the hospital as their own. It is in line with modern educational procedures which recognize participation as important in the learning process.

7. *The equipment in the Navajo home is meager and not at all comparable to that of the average modern home.* The typical hogan is a single room made of logs or stone with a dirt floor. There is an open fire in the center. The only openings are the door on the east and the smoke hole in the dome shaped top. The family sleeps on the ground on sheep skins. The Joint Health Education Committee felt that instruction in home nursing would help establish better home practices in the care of minor illnesses, and in the control of communicable diseases, at the same time giving the Navajo some knowledge of the services a hospital can give the sick. In keeping with modern educational methods, such instruction must be integrated in home-making courses rather than given as a

unit, and accordingly the committee recommended that it be taught by the home-making teacher with the assistance of a nurse when possible for the technical phases of the work. No available text on home nursing was found which met the requirements of this particular environment and culture. For that reason a sub-committee was appointed for the purpose of preparing simple instructional material based directly on the needs of this group. In doing this the sub-committee held conferences with a small group of outstanding Navajo women in order to insure the acceptability and suitability of the material.

SUMMARY

Leaders in both health and educational fields in the Navajo area have coöperated in studying their health problems and in formulating plans to meet them through education. Workers in the field now have at hand definite information regarding the health needs of the area with specific suggestions as to health education activities which may be helpful in meeting these.

Subject matter which is simple and appropriate for use with the Navajos has been put at their disposal. They can now go ahead with assurance that the efforts they make in line with these suggestions and in the use of this material will be effective.

The procedure followed has proved valuable in the development of plans suitable for use with this particular group of people with their distinct problems. More or less identical problems can be found in many rural communities today. In fact, many urban areas are operating under much the same needs. Health education must therefore be a vital part of programs in such areas. The methods tried here might well be used to further the work in child health in any locality. No ready-made program can ever meet the needs as effectively as one prepared by a local group. It seems essential that medical and educational workers learn to coöperate for such purposes. Educators without the technical assistance of professional health workers may foster health education programs which are unsound. Professional health workers in turn without the assistance of trained educators may offend every principle of good teaching because they do not realize that the presentation of facts is not enough and that there must be gradation in material and method based on the child's interest and needs if the program is to function. Children will benefit more fully when the two groups of trained personnel join forces for the common goal of child health.

How Can the Health Officer Make Greater Use of the Health Education Specialist?*

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TO a group such as this it is unnecessary to emphasize the importance of educational activities in a state department of health. However, it might be well to mention some retrospective facts as a basis for a clearer appreciation of present problems in that field.

When state health departments, as distinguished from the earlier and usually semi-latent boards of health, began to function actively, problems such as the establishment of safe water and milk supplies, tuberculosis sanatoria, more comprehensive control of communicable diseases, and community sanitation occupied the attention of health administrators. By the very nature of these problems, personal cooperation on the part of the public, though involved, was not paramount.

For example, filtration, chlorination, pasteurization, environmental sanitation, tuberculosis, and even smallpox programs, were handled on a mass basis. Loans for water purification plants, milk control ordinances in large cities, quarantine regulations for the curbing of epidemics, sanitation rules, tuberculosis clinics, and truancy legislation to enforce smallpox vaccination are instances of the factors which at that time were uppermost in the minds of state health officials. In short, the conditions which most readily lent themselves to group control measures were considered the most urgent from both the professional and the practical standpoints.

While, as you are well aware, these problems still occupy the constant attention of health department personnel, the rapid progress in these various fields made possible, in a very few years, a more individualistic interest in public health work than hitherto had existed. Consequently, chest, prenatal, well baby, and venereal disease clinics as well as immunization drives and other similar activities naturally followed the successes experienced in the less personal endeavors.

It was promptly recognized, however, that a public opinion which would result in sympathetic and intelligent action was a basic need in attaining the objectives involved in these newer efforts. It was also appreciated that to change indifference to such matters to active interest required more than field demonstrations. Some kind of health education obviously was needed. So, health departments, though still not especially conscious of the vital need of this type of activity, began to look around for help. Usually, their inves-

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tigation was limited to their own personnel.

Indeed, as late as 1921 in the majority of health departments, health education was far from a crystallized activity. To a large extent, it was anybody's business. And, as intimated, the work fell more or less into the hands of those members of the staff who had, or believed they had, natural literary or publicity skill. It was to such staff members that the duty of enlisting the coöperation of the public was assigned, the work being conducted in many health departments as an added rather than as an exclusive duty.

In passing, it may be said that a number of those who voluntarily assumed educational work in health departments had not misjudged their ability as some of the present nationally known names in that field eloquently testify. As a matter of fact, it was this very small group of pioneers who, by performance, helped to emphasize the basic importance of health education.

Today, all health department directors are alive to the value of publicizing their health programs and of informing the laity that public health measures require the active interest of the individual if maximum results are to be obtained.

But the administrators also know well, as has been demonstrated in campaigns to reduce the number of deaths from diphtheria, cancer, tuberculosis, and appendicitis, that educating the people to help themselves to health is one of the strongest influences in reducing mortality and illness from preventable causes. They realize that the problem of these avoidable casualties is a challenging one. That the art of translating scientific, medical, and even commonplace health facts into an interesting and activating form demands particular aptitude and experience also has been obvious for some time.

Health education, and with it the health educator, has grown up. No longer is this work viewed as a collateral or incidental department function. It has reached its stature, though by no means its maturity. Indeed, today as never before, public health officers realize that the pronouncement regarding the importance of health education, made at the first meeting of the American Public Health Association in 1872, was absolutely sound.

While it is not within the purview of this paper to detail the essential characteristics of health educational work, it may be remarked that the quality of such activities can readily be measured by the editorial acceptance of the syndicated press or news releases, by the reader reaction to the departmental publications prepared for popular consumption, by the listener appreciation of departmental broadcasts, and by response to platform presentations. May I emphasize that the success of any health educational program rests on the intelligent selection of personnel whose aptitude for this kind of work already has been demonstrated or is readily demonstrable.

As a means of increasing the usefulness of the specialist in health education perhaps a closer coöperation with the state medical society could be developed. This organization can be one of the most powerful educational influences in a state. Moreover, its willingness to work with state departments of health has been demonstrated on many occasions. Anti-diphtheria drives, pneumonia typing and pneumothorax services, appendicitis and crippled children's surveys are practical instances of significantly successful educational work on the part of state and component medical societies.

Merely as an illustration of possible further coöperation between the state medical society and the health education specialist, a state health department may desire to present cancer facts

in popular form to students of state teachers' colleges and to women's and coeducational institutions of higher learning within its jurisdiction. The commissioner of health enlists the sympathy of the public relations committee of the state medical society in the undertaking. The plan being approved by that group, all details for developing the schedule and the preparation and presentation of the lecture at the various institutions would devolve upon the health education specialist. However, the joint auspices of the undertaking would be emphasized in all of the campaign communications and in the attendant publicity. Quite aside from the conceivable benefits of efforts of this kind, is the practical policy of tying in the medical society with statewide educational activities of this kind.

Again, the advantages of an annual community health educational program under the mutual auspices of county medical societies, county health departments, and the state department of health may be evident. Here, also, the work of promoting the plan, coöperating in the development of local programs, preparation of press releases, arranging for motion pictures, and related interests, could be properly delegated by the commissioner of health to the health educator.

It also may be possible to bring into closer coöperation the work of the health education specialist and the women's auxiliaries of the state medical society. As an illustration, the health educational specialist, through the chairman of the state public relations committee of the women's auxiliary, could definitely assist in developing an annual physical examination campaign among their own members, the initiative for such a program having been taken directly or indirectly by the commissioner of health.

Similarly, the specialist perhaps could be used to develop syndicated dental health releases in coöperation with the public relations committee of the state dental society. This field of health education has not yet been emphasized in most states. As you know, sporadic attempts on the part of state or local dental societies to issue such releases in the press have not been successful because of a decided reluctance of the press to open its news columns to other than official governmental agencies. Moreover, the advantages of a closer connection with the state dental association by means of joint dental educational activity is clear.

Viewed more personally, a closer working arrangement between the respective county medical directors and the health education specialist seems to be indicated. Localized health education is extremely, indeed vitally, important. The editorial services of the health educator, and his professional ability in health promotion generally thus could be utilized to a greater extent than now is usual in most jurisdictions.

Once more, the health education specialist can be of service to local health departments by investigating their activities and reporting them in the form of a human interest narrative in the official bulletin. In my own state, this work promises to be of educational and promotional value.

In some jurisdictions, at least, it is likely that a closer relationship than now exists could be developed between the health education specialist and the state department of education through its divisions of health and physical education.

It is also believed that the health education specialist could increase his value to the health department and to the cause of public health by doing more public speaking—provided, of course, his aptitude in this field is adequate. It should be his duty to present popular health subjects before service

clubs, civic organizations, and student bodies, thereby in large measure relieving the commissioner and bureau chiefs of such engagements and limiting their addresses to the more scientific phases of the program before essential professional groups.

Likewise, popular presentations over the radio could well be taken care of to a greater extent by the specialist. Incidentally, in Virginia the State Department of Health, through its office of health education, recently has developed a state-wide radio coverage for one hundred "Health Hints"—brief talks on health adapted for radio use from weekly newspaper releases prepared by its office of health education. County health directors broadcast the talks where possible. Where the local station is not in a health officer county, the talks are broadcast by members of the local county medical society or they are incorporated in an already established program.

To some extent at least, these public relations possibilities of the health education specialist have not been sufficiently appreciated by many of us. Too often, this representative is viewed as a bulletin writer and pamphleteer, as a forwarding agent of motion pictures, and as a news source for the papers. Such functions, of course, are essential, but are by no means exclusive. If equal to the job, the specialist should be able to serve in a more personal and more direct way.

I realize that the suggestions that have been made are far from inclusive. They have been offered only as practical examples of extending the usefulness of the specialist in the average state health department, where the health educational work frequently falls upon a single staff member.

Elaborate radio programs, mobile exhibits, motion picture showings, and extensive health demonstrations and exhibits at fairs require more personnel than is available to the usual health department.

You have no doubt observed that the question of technics involved in the suggested broader aspects has been omitted. The technics are details which are not within the limits of this discussion, though it is patent to all of us that the most impressive educational program can be ineffective if they are faulty. Technics depend upon the wisdom and professional capacity of the health education specialist.

CONCLUSION

Given the ability, ambition, and personality, the extent and value of the work of the health educator is limited only by his natural resourcefulness, by an energetically and wisely applied imagination, and by the funds at his disposal.

Health education is being rightfully emphasized as never before. Its importance and its obligations are attracting to it the type of person who can measure up to the size of the job. That the health educator is alive to his possibilities is becoming increasingly evident each day. For health departments, for health education programs, for the public good, modern health education does much. But it promises much more.

Is Health News Fit to Print?*

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IS health news fit to print? In considering that question, let us first define our terms. And in setting up a criterion of what constitutes fitness to print, let us for purposes of discussion remember we live in an age of power politics, and propaganda, and pragmatism: an age stripped of the niceties of culture, of reticence; even of the nicety of accuracy. I propose to set up therefore, as a definition of fitness to print this test: "Will it be read?" If the health news in question is also true and beautiful, so much the better; but if it is without reader interest, i.e., if it will not be read, both the time of the writer and the space of the newspaper will be economic waste and intellectual lost motion.

This definition brings up a point often lost sight of in discussions of public health and its relationship with the press. In many ways we who work for public health live in a press agent's paradise; a Utopia so complete and so absolute that it lies beyond even the comprehension of the average public relations worker. For example, I once sat through a previous health education sectional meeting in which a very eminent public relations council took up the entire time at his disposal in explaining ways of "breaking into" the newspapers, oblivious of the fact that everywhere, with the fewest of exceptions, the problem of public health education is not to hoodwink reluctant editors into grudgingly printing material. The problem is how to make the best use of the generous, even lavish, editorial space available to us.

In every city in the United States, newspapers *are* interested in public health, interested in coöperating as completely as they may be allowed, with departments of public health and with recognized voluntary health agencies. There is a deep, general feeling that public health is news; that the agencies of public health are really agencies of community betterment; that newspapers, which claim above all else to be institutions for the promotion of civic interest, should lend every assistance to public health education. The problem is not to get health news printed, but to make our health news fit for the printing; to force an affirmative answer to that question "Will it be read?"

We who work in this field held in so much respect can best utilize the help and coöperation so graciously placed at our disposal by cultivating in our turn a respect for this institution we call the press. And we may well begin with fundamentals.

In the first place, we in public health education have a very high regard for our fundamental concept, health. We

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expect our friends to show a great respect for health. Is it too much to ask for us to show an equal respect for the fundamental concept of a newspaper, which is news?

Let us examine this point. A newspaper exists primarily to serve a nebulous element called news. This element is a very effervescent, volatile ingredient, originally present in all news stories, including those relating to public health. If we in the health department have in our hands or our head a good health news story, from which this fleeting ingredient is boiling steadily away, and if we carry this story around hour after hour, probably overnight, and then at some time convenient to us present the stale, flat, insipid residue to our friend the press, we thereby show our disrespect for this fundamental concept *news*. And our editor friend has the perfect right to feel toward us exactly as we should feel toward him if he and all his staff should go out and contract typhoid fever and push our carefully nurtured typhoid curve back to 1895.

In our efforts to utilize to the best advantage the coöperation of our newspapers, after cultivating this respect for news we must develop in our own minds a reasonable respect for the profession of the press, which is journalism.

The front line trenches of the news field are in actual fact thinly held. No newspaper in America has half the reporters it would like to have. Consequently, if you can bring to your editor friend your health news written down in a manner conforming at least to the elementary principles of journalism, you do him a welcome service.

These elementary principles of journalism are not hard to learn. They consist of things and methods of writing you have heard of many times before—such things as the "lead," that first sentence which tells the where and how and why and when and who—as the arrangement of detachable paragraphs whereby the story may be chopped off at any paragraph ending, from the bottom upward, as the necessity of space limitation may require. They include also other less important things like style—say persons, not people; abolition, not abolishment; begin, not commence; gave, not donated; and so on to rules peculiar to individual newspapers. The elements of journalism, or enough of them to help materially can be learned in much less time than is often spent complaining about inaccurate reporting. Even a story dictated to a reporter comes out better if it is originally given in something approaching journalistic form.

Our relationship with the press will be strengthened if in addition to a respect for the fundamental concept of news and a respect for the profession of journalism sufficiently deep to result in our casting health news into ordinary newspaper language, we lastly cultivate a respect and appreciation for the business of the press. By this I mean we should be frank to recognize the limitations imposed by the economic and practical world in which newspapers are published. We must not expect the impossible, either in the length of individual stories or in the volume of health news we expect any individual newspaper to publish. Newspapers have space limitations or space bans which depend on a varying ratio between the amount of news and the amount of advertising space in demand from day to day. There are also other mechanical problems concerned in the publishing of newspapers of which we on the outside know next to nothing.

We have particular need to show respect for the business of newspaper publishing when the question of the suppression of any particular news story arises. It has been our experience that in every case where suppression is needed it is far better to take respon-

sible newspaper executives completely into our confidence rather than to attempt to impose our own censorship.

Because we work in a field in which it is so easy to secure newspaper cooperation, we should guard ourselves against the danger of excess publicity. Any event or institution may be overpublicized. We should take care not to wear out our welcome either with the newspaper or with its readers.

Any discussion of public health in newspapers and magazines would be incomplete without reference to the profound change which has occurred in the publications field during the past few years; namely, the increasing facilities for, the importance of, pictures. One is always tempted to quote the Chinese regarding the relative value of pictures and words. May I instead paraphrase another old saying, in that today faces, not names, make news? It is our firm conviction that for any publicity purpose for any health organization, official or nonofficial, one picture is worth many columns of news stories.

There are certain obvious rules about pictures to which obedience is well worth while. The time element is important because even the most high-speed engraving department lags far behind the linotype. There is a certain journalistic technic in writing effective cut-lines and a certain approved mechanical method of keeping cut-lines and photographs together. With conservative newspapers photographs of certain medical and sanitation subjects of importance to the public health are not acceptable. All these limitations detract not at all from the value of pictures to any publicity or health educational campaign.

In concluding and summarizing the entire question "Is Health News Fit To Print?" it should be pointed out that health news is a welcomed guest in the columns of American newspapers and magazines. If our health news conforms to the ordinary obligations imposed upon guests by the laws of hospitality, it will in truth be very fit to print.

Mechanical System for Record Keeping of Morbidity, Treatment-Progress and Control of Venereal Diseases*

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THE U. S. Public Health Service has made intensive efforts for two decades not only to determine the extent of the venereal disease problem, but also to measure the effectiveness of existing programs for its prevention and control.

Fragmentary data have been assembled through monthly reports from clinics and private physicians, special censuses of the treatment sources in selected areas, and retrospective studies of clinic records. Analysis of these materials has yielded information on the minimum number of persons infected and the points at which an attack on the problem would be most effective.

It was recognized that a program which would ultimately control the disease must be based upon three major principles: (1) the finding of the infectious or potentially infectious cases; (2) the provision of adequate treatment facilities for the treatment of these cases; (3) the necessary educational and follow-up activity to keep cases under treatment until infectiousness has been permanently eliminated.

Perhaps the major administrative problem in a satisfactory venereal disease program was early recognized to be a record system which would enable a clinic director or administrative officer to analyze periodically clinic activities to insure constancy of aim of the program. A study of existing systems showed that, for the most part, they were tickler files of patients with early syphilis and monthly compilations of persons under treatment, and the drugs and services administered to each. The occasional reviews made of the accumulated case folders generally did not uncover deficiencies in clinic performance in time to correct them. Patients who had lapsed from treatment before receiving maximum benefits had disappeared. The tracing of sources and contacts had become even more difficult with the loss of time. Pregnant women with inadequately treated syphilis had already been delivered; the child, if alive, could not be located.

A system was needed by means of which mass data could be evaluated rapidly and the cases requiring immediate attention could be selected quickly.

Such a system was available in the commercial field, and it remained only to apply it to the keeping of records in

* Read before the Vital Statistics Section of the American Public Health Association at the Sixty-eighth Annual Meeting in Pittsburgh, Pa., October 19, 1939.

venereal diseases. If a venereal disease patient could be viewed as having opened an account with the clinic, and each time a treatment was given it was recorded on the punch card, and automatically posted against the patient's account, an up-to-date balance of his medical history would be maintained. With the complete medical records of patients on summary punch cards, it would be possible to make rapid selections of individual cases in need of special services as well as to make current appraisals of treatment activities.

In consequence of these experiences and needs, the mechanical system for reporting the morbidity, treatment-progress and control of venereal diseases was developed.

DEVELOPMENT

Several demonstration projects were established which soon revealed to clinic directors and health officers that the system met a definite supervisory need which had not been fulfilled by previous methods.

The operation of the mechanical reporting system depends upon key punching and tabulating machinery. Such equipment has been installed in 5 states and 3 metropolitan areas. The units in the District of Columbia and Chicago take care of the localities that do not have individual equipment.

In addition to individual patient listings, the mechanical reporting system also provides printed monthly tabulations of clinic populations or case loads and clinic activities or services for all venereal diseases.

These reports replace the existing hand compilations which clinics are required to furnish local and state health departments and the U. S. Public Health Service, and to give clinic directors and health officials data for planning and carrying out effective venereal disease programs.

MATERIALS AND METHODS

In order to adopt the machine system for the reporting of data for venereal diseases, an inventory of the active cases already under treatment must be obtained and a central tabulating unit set up by the state health department to punch all cards and process the data. The procedure used in securing the required information for the continuance of the system consists basically in maintaining an up-to-date record of every service rendered the patient. The treatment source also furnishes a standard report from each new admission for venereal disease. This record gives all the information required to set up the master or summary card in the central tabulating unit. The summary card is punched and held in the central tabulating unit. It is kept current by means of a second punch card known as the progress card. By means of the progress punch card, the treatment source notifies the central tabulating unit each time a service is rendered to the patient. The progress cards are punched in the central tabulating unit and machine-filed with the summary card for the corresponding case. At regular intervals the progress and summary cards are added together by machine. A new summary card is automatically punched, carrying forward the accumulated history to date.

The summary punch card file in the central tabulating unit is a duplicate of the clinic case folder files. However, the information is now in a form that can be made available readily. The summary punch card file lends itself to rapid evaluation to answer any of the questions needed for appraisal of the treatment program or clinic performance. Similar information could be obtained from the case folder file only with tedious, time consuming, belated, and expensive hand tabulations.

The central tabulating unit operates

as a service unit only. It does not in any way relieve those in administrative charge from the responsibility for correct clinic procedure. It merely lifts the burden of clerical routine and provides essential information at a minimum cost. The cost is $1 per case per year. This estimate for the first year of the system in any area is made from the budgets for the first year of the system in a given area where considerable expenditure is necessary for abstracting purposes. It has been found, however, that the cost for succeeding years will be materially reduced. Costs of $.35 to $.40 have already been reached in certain areas.

The average minimum budget for operation of the central tabulating unit is about $15,000 per annum. In areas where the venereal disease load is less than 15,000 to 20,000, it is manifestly not justifiable to install a central tabulating unit for the tabulation of venereal disease reports alone. However, in such areas it has been found that equally applicable procedures have been found in the field of vital statistics, communicable diseases, nursing, maternal and child hygiene, industrial hygiene, laboratory, and other health department activities.

By prorating the cost among the divisions that make use of the central tabulating unit, it makes feasible an economic installation of the system in areas where the venereal disease problem is not so extensive or where the venereal disease program is in the developmental stages.

SUMMARY OF DISCUSSION

Dr. J. F. Blackerby, State Registrar of Kentucky, Louisville, Ky., discussed the use and value of the mechanical system in Kentucky as a service unit not only for the Bureau of Venereal Diseases, but also for vital statistics, laboratories, and county health work. He stated that plans had been completed to extend this service to three bureaus—finance; maternal and child health; and food, drugs, and hotels.

A more complete detailed report of the mechanical reporting system will be found in the March issue of *Venereal Disease Information.*

Bertha Shafer, M.D., Executive Director of The Illinois Social Hygiene League, Chicago, Ill., stated that the information secured through the mechanical system during the past year had proved a valuable aid in clinic control. The individual listings of patients permitted the clinic to concentrate its efforts on the cases presenting the greatest needs. Furthermore, the preparation by machine of the monthly report of clinic activities for state, local, and federal health authorities had relieved the clinic personnel from routine clinical duties so that they could devote more time to the business of treating patients and bringing sources and contacts under medical care.

Problem of Dental Care in the Public Health Program*

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ONLY in recent years have health agencies given serious thought to the high prevalence of accumulated dental defects. In fact it was only a few years ago that any attempt was made on a nation-wide scale to determine the extent of these defects.

Dental caries is unique among the public health problems, first because it is a chronic unspectacular disease that does not kill directly, and second because it affects the only tissue in the body which cannot repair itself.

Dental caries is generally recognized as a physical impairment which exceeds all others in prevalence. To date there is no effective method for the prevention of the initial lesions of this disease. There are, however, effective methods for the control of these lesions in their incipiency which consists of the removal of carious or defective dental tissue and replacing it with chemically stable filling materials. If begun early in life and continued periodically thereafter, this method of control of dental caries and its sequelae is effective and well adapted to widespread application in dental practice. Obviously then the primary objective of a dental program must be the servicing of the yearly increment of this disease.

In public health administration dental disease is classified generally with those diseases which can be controlled but not prevented. Like syphilis and cancer the program is divided into two main categories—education and early treatment.

From a dental health educational standpoint we generally classify the public into three main groups: (1) those who can well afford dental service but are not informed of the advantage of early and periodical treatment; (2) those who can barely afford treatment but prefer to spend what is left of the pay check for luxuries; and (3) those on a subsistance level or below who cannot pay for service no matter how well educated.

Meager statistics show that under 25 per cent of the population ever get any dental service other than an occasional tooth extraction for the relief of pain; yet it is known that a far larger per cent are financially able to provide at least adequate control service for their children. It is that large middle group who provide a fertile field for the dental health educational program.

Most of our endeavors in the field of public dental health have been confined to the educational phase. The reasons for this are obvious—it is the

* Read at a Joint Session of the American School Health Association, and the Maternal and Child Health Section and the Oral Group of the American Public Health Association at the Sixty-eighth Annual Meeting in Pittsburgh, Pa., October 18, 1939.

easiest and costs much less money. As a consequence many of our programs are educationally top heavy. It appears that the time has come when all health workers must give more attention to the service side of the dental health program even though the road be rocky and fraught with difficulties.

Sooner or later some solution must be found for meeting the dental needs of that large group of dentally indigent who are not at present securing any dental care. There is a growing public demand among these people that means be found to meet this need.

It is obviously futile to carry on extensive campaigns of dental health education among these people, to discover and rediscover dental defects among their children, yet provide no means for their correction.

That clinical dental service furnished by official and nonofficial organizations is inadequate is shown by a number of surveys. Two of these reports [1, 2] show that the state departments of health and education employ 65 full-time and 36 part-time clinicians, while the 326 cities of over 25,000 population employ 178 full-time and 437 part-time clinicians, a majority of whom are employed less than one day per week. In almost every instance the service is limited to the dentally indigent of the school age group. These surveys do not include the dentists employed in smaller communities or by volunteer or other unofficial agencies. There probably are not over 1,000 in this group. We know there are about 25,000,000 children of school age in this country and that about 20 per cent of them fall into the dentally indigent class. This means there are roughly 5,000,000 children of school age alone, eligible for public supported dental service.

An estimate of the number of dentists providing whole and part-time service to this one group would be around 2,500. This would mean over 2,000 patients per dentist, a large majority of whom are employed less than half-time. In a few urban areas there are a larger per cent of dentists than this. In most of the smaller communities there are less or none.

Data collected for the Health Facilities Study of the National Health Inventory have been used by the Public Health Service to evaluate some features of public dental services. Mountin [3] and his group selected 1,861 health agencies, official and nonofficial, in 94 widely separated counties for this purpose. This study shows that all agencies in the 94 counties provided 817 individual services per 1,000 school children. Indirect services, such as examinations and prophylaxes accounted for half of these.

A survey of the current needs of the school children of these 94 counties is not available. However, if we apply the data obtained by the U. S. Public Health Service in Hagerstown, Md.,[4] on 4,400 school children as an index, we can approximate the percentage of needed essential services, such as fillings, being provided for this group. In Hagerstown it was found that the average child had 7.5 carious tooth surfaces needing fillings alone. If this average is applied to the total school population of these 94 counties and related to the performance of their health agencies, the resulting calculation suggests that such agencies place only about 3 per cent of the estimated fillings required. Based on service for indigent children, only 15 per cent of the need is provided, if we can assume that 20 per cent of the total school population falls in that category. These figures are estimates but indicative of the manner in which all health agencies in 94 predominately urban areas are meeting the problem of dental care for needy school children.

This study also shows that 4 times as many children in counties of over

500,000 population received service than did those in counties under 40,000.

In a study [5] of similar nature among 9,000 widely distributed families of all economic groups, Collins found a disparity in the frequency of dental service between urban and rural groups. Children in cities of over 100,000 population between the ages 5 and 19 received twice as many fillings as did the same group in rural areas.

On the financial side of the picture the study made by Mountin in the 94 counties shows that all agencies which provided some measure of dental service spent 2 per cent of their total operating budget for the employment of dentists. Health departments in these counties spent 1 per cent of their total budget for this purpose.

There are other complexities in the establishment of adequate dental service, one of these is the uneven distribution of dental practitioners. A study of this situation will show too many of them crowded in centers of population, with thousands of the smaller communities without dentists. At the census of 1930, each dentist in the country served an average of about 1,700 persons, but this ratio varied from an average of 1,290 persons per dentist in an urban state such as New York to 4,000 persons or more per dentist in the rural states of Alabama, Arkansas, Mississippi, and North and South Carolina. The disparity observed in recent surveys of urban and rural communities in the receipt of dental care indicates that inaccessibility of dentists in the rural areas is in part responsible for the greater neglect of dental needs by rural families.

In the solution of the dental problem in our rural areas, restoration of balance in the distribution of dentists is an important factor. The economic and professional rewards of dental practice in rural communities must be increased if the extension of dental care in our rural population is not to be impeded by insufficient dental personnel.

Many counties in the sparsely settled western states could not and never will be able financially to support a dentist, yet there are many people living there in need of dental service. These are problems challenging the health department and the dental profession that are not amenable to a public dental health educational program.

Certainly definite action is imperative to meet this situation. Unquestionably more public funds—federal, state and local—must be appropriated for this work. It may be necessary for health agencies to underwrite professional personnel at least temporarily if they are to be attracted to small sparsely settled communities. This can be done by assuring them a small income for caring for indigent children. Basically this seems to be a better plan than to have state employed personnel provide treatment in these areas. To accomplish a plan of this type it will be necessary for the state dental examining boards of some of these states to change their viewpoint on the matter of licensure.

While dental health activities have made rapid strides since the passage of the Social Security Act, the amount of funds and the number of personnel are entirely inadequate to cope with a health problem so widespread.

Health and education agencies are confronted, in this instance, with a problem difficult in other respects. If dental disease were as spectacular in its effect as poliomyelitis, if it killed directly and as quickly as pneumonia, the means for its control would long ago have been at hand. However, the public will not always be satisfied to neglect their teeth for the reason that decayed teeth will not directly kill or cripple.

The dental problem is so serious and universal it will take the concerted action of all health workers and edu-

cators if in this generation we succeed in materially reducing the high rate of tooth morbidity and mortality.

In the last quarter of a century health needs have changed to the point where the health department can no longer confine its activities to communicable disease control and environmental sanitation. In fact, it is no longer possible to draw sharp lines between prevention and treatment.

If the health department is to fulfil its responsibilities to the indigent members of society and the non-indigent in sparsely settled communities, it must provide facilities for adequate medical and dental care for these groups as well as for preventive services.

The full responsibility for the dental health program for the dentally indigent cannot be successfully met by practising dentists and the small number of dental personnel in health departments alone. The promotion of dental health is a true function of the health department. To be effective it will require the careful consideration and active participation of all health workers.

REFERENCES

1. Cady, F. C. Dental Health Organizations in State Departments of Health of the United States. *Pub. Health Bull. 251* (in print).

2. *A Survey of Mouth Hygiene Programs for School Children in Cities over 25,000 Population* (5 volumes). Cleveland Child Health Association.

3. Mountin, J. W., and Flook, E. Dental Programs Sponsored by Health Agencies in 94 Selected Counties. *Pub. Health Rep.*, 54:1625 (Sept. 8), 1939.

4. Klein, H., Palmer, C. E., and Knutson, J. W. Studies in Dental Caries. I—Dental Status and Dental Needs of Elementary School Children. *Pub. Health Rep.*, 53:751 (May 13), 1938.

5. Collins, S. D. Frequency of Dental Services Among 9,000 Families Based on Nationwide Periodic Canvasses, 1928–1931. *Pub. Health Rep.*, 54:629 (Apr. 21), 1939.

Services for Crippled Children under the Social Security Act*

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SERVICES for crippled children are becoming a matter of increasing interest to public health officials and state health agencies. This, I believe, is borne out by the fact that there has been a noticeable trend to place the administration of such services in state departments of health.

In 1935 at the time of the passage of the Social Security Act there were only 12 states in which state-wide programs of services for crippled children were in operation. In 4 of these states the services were administered by the state health department.

By June 30, 1936, 18 of the 46 state programs in operation were administered by the state health department. By June 30, 1938, Alaska, Hawaii, the District of Columbia, and every state had designated an official agency for the administration of these services. By June 30, 1939, all of these states and territories had programs in operation.

At the present time the state agencies administering the state programs are as follows:

Health agency	26
Welfare agency	14
Crippled Children's Commission	5
Education	5
University Hospital	1

Since the enactment of the Social Security Act only one state has transferred the services for crippled children from a health department to another type of official agency.

A majority of the state health departments administering these services have established a division of services for crippled children.

In the first full year of operation of services for crippled children, Congress appropriated $2,850,000 for federal grants-in-aid to states. The Act provided that all federal grants must be matched with an equal amount of state funds. Some states have had difficulty in matching the full amount of the federal funds allotted to them. The increasing interest in the services is shown by the fact that in the fiscal year 1938, 32 states were able to match the full amount of federal funds available, while in 1939, 37 states were able to match the full amount available. Out of the funds appropriated by Congress, $20,000 must be allotted annually to each state and the remainder of the $2,850,000 is allotted on the basis of the number of crippled children in need of care and the cost of providing care. Out of the total annual appropriation, $400,000 is reserved each year for allotment to the states on the basis of additional need. This year the requests received from this fund amounted to $800,000 or twice the amount available.

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On May 15, 1939, reports from state agencies showed 13,000 children on state registers in need of care, due to lack of funds. In recognition of this need and the requests for additional funds, Congress in August, 1939, authorized the annual appropriation of $1,020,000 additional funds for services for crippled children and included provisions for an allotment to Puerto Rico. The Deficiency Appropriation Bill included half this amount for grants during the present fiscal year. This money is not required to be matched by the states. Of this additional amount, $240,000 has been allotted to the states on the basis of population under 21 years of age, sparsity of population and average income; $50,000 has been allotted on the incidence of poliomyelitis; and $200,000 has been reserved for a beginning in services for children suffering with heart diseases. The basis of the allotment for children suffering from heart disease is under consideration at the present time.

The growth in interest in the crippled children's program is shown in the activities reports received from state agencies. At the end of the calendar year 1936, there were approximately 97,000 crippled children on state registers as compared with 224,000 at the end of the fiscal year 1939.

At the beginning of the fiscal year 1939, there were 4,225 crippled children under care in hospitals; and 1,372 under care in foster and convalescent homes. There has been a marked increase in the use of foster and convalescent homes during the past year.

During the fiscal year just ended, over 193,000 visits were made to clinics for diagnosis and treatment; over 40,000 admissions to hospital care; about 5,000 to convalescent home care; and about 2,000 to foster home care.

During this same period, over 194,000 home and office visits were made by public health nurses; 250,000 visits were made by physical therapy technicians; and an increasing number of children were given medical social work services.

For the year just ended, crippled children were seen at 296 permanent and 572 itinerant clinics. Five hundred and forty-five hospitals were used for the care of crippled children; a majority of which were private institutions. Eighty-eight per cent of these institutions were approved by the American College of Surgeons.

Detailed reports of the personnel employed under the program are not available as yet for the fiscal year 1939. It is interesting to note that during the previous year over 800 surgeons and 655 other physicians as consultants, such as plastic surgeons, ophthalmologists, pediatricians, oral surgeons, and others, were employed, with a comparable number of public health nurses, medical social workers, and physical therapy technicians.

Increasing attention has been paid during the past year to that large group of crippled children not in need of hospitalization and operative care. It is estimated that this group constitutes 75 per cent of the total number of children seen at the average diagnostic clinic. The increase and improvement in field services given by public health nurses, medical social workers, and physical therapy technicians has made it possible to reach more of this group and to care for conditions that do not require hospitalization.

Professional training at recognized training centers has continued during the past year. In 1938, 173, and in 1939, 108 persons were given additional training in public health nursing, medical social work, or physical therapy.

State agencies are continuing postgraduate educational courses for local practising physicians in the early diagnosis, prevention, and treatment of

crippling conditions. In 1938, 23 states included such provisions in their plans.

The standards for professional personnel have been maintained and improved during the past year. Sixty per cent of the orthopedic surgeons employed under state plans are either eligible for certification, or are certified by the American Board of Orthopaedic Surgeons. State agencies are increasingly using the American Boards of Certifications in the employment of consultants in other fields.

The recommendations with regard to public health nurses, medical social work, and physical therapy technicians made by the National Organization for Public Health Nursing, the American Association of Medical Social Work, and the American Physiotherapy Association, respectively, are increasingly being used by state agencies as a basis of requirements for the employment of professional personnel.

There has been a noticeable broadening of the scope of services. The services have been extended beyond diagnosis and operative care to include systematic and continuous case finding, registration, establishment of clinics that combine diagnosis and some forms of treatment, more complete general physical examinations, improved case records, more detailed instructions on discharge from hospitals, increased foster and convalescent home facilities, and improved after-care services.

One feature of the program deserving special notice is the increase in interest in the quality of care children are receiving. Several states are systematically reviewing the quality of care through qualified consultants; some are planning to employ out-of-state consultants for this purpose. This interest is a healthy sign that the state agency feels a responsibility for providing only the best care available to crippled children in the state.

Coördination of Educational Programs of All Health Workers*

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MOST health workers now in official public health departments have been allied with other professions or organized groups. Many health officers have been private practising physicians. The public health nurse was trained originally for private duty. Some public health engineers were at one time in the commercial field, and most of the health educators have been teachers, publicists, or commercial advertisers.

Influenced by his training and experiences in the first profession, each worker came into public health with his own interpretation of the philosophy, the principles and technics of promoting and safeguarding the health of the public. Each individual brought with him a program of work, formulated usually on a national basis, by his first group.

The extent to which each worker hangs on to his "first loved profession," is evident by the articles he writes, the reference books he keeps on his desk, his membership affiliations in organizations, and the periodicals to which he subscribes.

For example, one finds many public health nurses who read their journals on nursing but who do not subscribe to or read the *American Journal of Public Health*.

Each individual, whether he be doctor, nurse, engineer, or teacher, who enters the field of public health, soon expresses his strong conviction that the basis for public health work is education. "We must educate the public," is a catch phrase repeated by all. Immediately each worker assumes the rôle of an educator. It seems never to occur to him that education comes from within the human organism in accordance with specific laws in the science of human learning, and that education has certain principles upon which to base its technics. He begins his so-called "educational program," therefore, as he was taught in the public school, the university, and the hospital. To him education is *telling*. It is something to be applied from without by one person—usually a specialist—to large groups of people. "We can control syphilis only through education," said a physician newly appointed to a health department. "In less than a year I've educated over 50,000 people through talks and lectures." One needs only to read the monthly or annual reports of the health departments or individual health workers to find that this opinion is more or less universal. In such reports under the heading, "Edu-

* Read before the Public Health Nursing Section of the American Public Health Association at the Sixty-eighth Annual Meeting in Pittsburgh, Pa., October 20, 1939.

cation," we find a summary of so many hundred talks given, so many thousand pieces of literature distributed, so many moving pictures shown, and so many broadcasts given. So, we find public health workers clinging not alone to their "first loved profession" but also their early impressions of what constitutes teaching or "educating the public." This includes the health educator, for many such workers in this phase of public health may be observed in the paths of formal education or they may be developing a program with an overemphasis on the use of publicity tools.

With this patchwork quilt of personnel within the public health profession, which finds itself a combination of medical science and education, is our problem one of coördinating all of these highly individualized so-called "educational programs," or one of working out together a new program of public health education? Many good things have come from the trial and error methods of the public health nurse who never heard of the laws of learning. Communicable diseases have been prevented and controlled and lives have been saved by the dictatorial police methods of the health officer. Food establishments have been cleaned, milk supplies have been made safer, and sanitation laws enacted under the rigid inspection of the sanitarian. The tools of publicity and propaganda, which have been used by all public health workers, have played an important part in arousing interest in higher standards of living. These devices have been instrumental in bringing about many changed behaviors on the part of individuals and groups. On the other hand, when we look honestly at many situations surrounding us in reference to sanitation, inadequate housing, self-medication, the use of psuedo-medical services, the lack of medical and hospital facilities, the blind following of commercial advertising, and the increasing number of patients in mental hospitals, thinking persons should begin to question our future methods of educating the public into ways of better living.

So, in this brief analysis of the situation in reference to the quality of public health education, it is not our desire to be critical of past efforts, nor do we wish to leave the impression that all public health education should be placed in the hands of highly trained health educators. We believe that every person engaged in any phase of public health work—the public health officer, the public health nurse, the public health engineer, the nutritionist, the mental hygienist, and the office clerk—should feel that it is his or her responsibility to educate or guide the public into ways of healthful living. Our plea is that every public health worker, regardless of his background, his previous training or experience, should gain some understanding of the basic laws of human learning and keep abreast with the newer principles and technics of education to the same extent that he attempts to move forward on the basis of medical research. Just as the public health nurse turns to the medically trained physician for an interpretation of medical science, so she should seek also, the specialist in education for an understanding of the educative process.

As we all know, in the laboratories of medical science, new discoveries are brought forth almost daily. Many of these findings, of necessity change the technic of diagnosis, treatment, and prevention. The same thing is true of education. In the laboratories of real children—the nursery school, the kindergarten and experimental groups of older children and adults—research is gaining a better understanding of how children and adults learn, how they grow, and how they develop toward maturity. From these studies, we are beginning to discover the influences

which block or retard the learning process. Teaching technics are changing to meet these new findings. For example, with the research of Willard Olsen,[1] concerning physiological patterns of growth in relation to learning; with the research of Beth Wellman,[2] in relation to environmental experiences and learning; with Thorndike's contribution to adult learning, and with the research of the Progressive Education Association concerning growth and adjustments in adolescence, technics or methods of educating the school child and the general public in ways of better living must of necessity be different from our earlier methods.

It seems to me therefore, that we, in the field of public health need to work out together a new pattern of public health education. Let us look at the characteristics of such a program based upon the science of learning. Would it interfere with the medical technics of the services of the health officers, the nursing technics of the public health nurse and the technics of the sanitary engineers? Such a program would utilize the service-technics of each individual health worker as powerful aids for guiding the public into ways of healthful living. The foundation of this program is services rendered in an educative way by all public health workers.

"Every immunization given, every water supply installed or improved, every toilet built or changed, even the technic of sterilizing the needle, and the mechanics of keeping records, should not be ends in themselves but convincing arguments for better living," says Dr. Felix Underwood, State Commissioner of Health of Mississippi. We would add that every health examination given a school child, every conference with parents, every clinic service, every visit to a home, every contact with community leaders in civic or professional clubs should be conducted in such a manner that these individuals or groups will gain a better understanding of the values of preventive measures in everyday living.

These services can be rendered in an educative way only to the extent that health workers understand the learning process and are able to locate influences which may retard or block the learning of those to whom services are given. What provisions can be made for making more effective all of our efforts toward educating the public into more healthful ways of living, with a program of education based upon the service point of view? There are three fundamental steps which may be taken by any local health department group that has a sincere desire to merit its leadership in any community and whose members are willing to discard old patterns of early professional training and keep abreast with the new.

1. Set up a plan whereby each public health worker—doctor, nurse, engineer, technician, clerk and health educator, may be guided to understand better the *philosophy* of public health in relation to our social structure as a whole.

2. Include in this plan provisions for the same individuals to secure help and guidance in understanding the sciences of human learning and the principles of education as they relate to the public health services.

3. Provide opportunities for the guidance of all workers to evaluate their present activities and methods of health education in terms of the basic philosophy of public health and learning process of human beings.

These three steps may be used as the basis for staff conferences, study groups, and meetings composed of *all* workers, including the administrative director and the office clerks. Such conferences cannot be held with effective results by nurses meeting separately from the health officers, sanitary engineers, and other personnel of the department. Just as the health department group has found ways and means of studying more about the prevention and control of syphilis or pneumonia,

so they must study the most effective way of educating the people of their community. Institutes, summer school courses, and the use of the consultant in education should be used freely.

Under the first step—that of gaining a better understanding of the philosophy of public health in relation to the social structure as a whole—each group should discuss freely the viewpoints of various leaders on the question—"Toward what direction is public health moving, regardless of present-day confusion, inadequate finances, and federal consolidation?"

The Committee on Administrative Practice of the American Public Health Association,[3] has stated very simply a broad viewpoint toward which they believe public health is moving in the social structure of today. I quote a digest of two paragraphs of this report. I have changed the words "health officer" to "health department." A digest of the Committee's statement is as follows:

> Official public health departments, a unit of state, city or county government, once were content to deal only with the most urgent sanitary needs of the environment, and with the most pressing problems in the control of communicable diseases. The modern health departments have an obligation to educate the public in ways of healthful living and in the prevention of infant and maternal deaths. It is now recognized that the responsibilities of these departments go even further, for public health involves the early diagnosis of diseases which are at best only partially preventable, and which, in the past, have not been dealt with on a community basis. For the prevention of such diseases, it is the function of the public health department to see that the community is provided with personnel and facilities whereby early diagnosis can be followed by prompt and adequate professional care. The increasing complexity of social forces and their effect upon the health of individuals focuses attention upon diet and nutrition, upon housing, upon opportunities for recreation and upon social and economic factors generally, which exert profound influence upon health.
>
> Though the modern health department has wider opportunities than its predecessor, this does not mean that the department or the local government must necessarily assume responsibility for providing all the services which come within the field of health interest or health needs of the general population. It does mean that the health department has broad responsibilities to survey the health conditions of the community, to measure its health needs, to ascertain the extent to which the community is supplied with necessary personnel and facilities, and to participate in the formation of practical plans—appropriate to the communities' needs and means—to assure that adequate personnel and institutions are available in the community. On this basis the health department becomes the unit of local government chiefly responsible for planning, whether the service is to be administered by the health department or by other agencies, public or private, organized or unorganized, collective or individual.

With the acceptance of such a philosophy not only will there be changes in the technics of public health nursing and in our present methods of educating the public, but all other phases of public health will be brought into true focus. Health officers will see that they cannot continue to carry their earlier hospital attitudes toward nurses as subordinates, for public health is a cooperative adventure to be coöperatively planned by every member of the department. If the health department is to become a "unit of local government chiefly responsible for planning" to meet the health needs of a community, the staff of professional health workers must first learn how to plan coöperatively within their own ranks.

The second step for improving our efforts toward educating the public into more healthful ways of living, namely that of securing help in understanding the *laws* of *human* learning and the newer technics of education as they relate to public health services, will follow logically after the group's acceptance of a broad philosophy. For each group will feel a need for such understanding and will begin to formulate its plan for learning more about the newer procedures in education.

In the State of Kentucky it has been my privilege, as an educator on the staff of the State Department of Health, to work coöperatively with public health nurses and all other public health workers on an educational basis. We have set up a state-wide plan for continued learning or in service education for workers on the administrative and field staffs of the State Department of Health and the personnel of the 89 coöperating county health units.[4]

In the small study groups, which form the basis of this plan, the programs each year have been organized upon the principles of education. Discussions and demonstrations have taken place in these study groups in reference to the laws of the human learning. It has been our belief that the first responsibility of the health educator is to help all public health workers to become better educators. We believe that services rendered by a health officer, a public health nurse, or a sanitary engineer *in an educative way* are more effective than all the words, visual aids, or unrelated activities of the health educator.

The third step, that of evaluating our services and present practices in terms of a philosophy of public health and the learning process, is easier said, perhaps, than its actual accomplishment. A ready-made plan or device cannot be set up for this evaluation. The methods of evaluation can come to a group only through its understanding of the philosophy of public health and the principles of human learning.

For example, when a nurse understands that a classroom teacher and a group of children, or a mother in the home will carry out more effectively any activity for which they have had a part in the planning, the nurse will question her ready-made plans which in the past she has formulated alone. We believe it is the function of health educators, as well as directors and supervisors of nursing service to guide nurses to learn *how to think,* rather than give them ready-made plans and devices of *what to do.* When the public health nurse is working with a family or a group she must keep her eyes open to the existing situations which may be the cause of many health problems. She must, of necessity, be making decisions and adjustments in order to guide the patients to meet their own health needs. Memorizations of routine outlined technic does not build for flexible change. In our very close association with public health nurses during the past five years, we have found that as soon as a nurse learns *how to think, how to question,* and *evaluate* her own services, she will find for herself new ways for old methods.

Much has been said and written these past few years on the subject of evaluating the health teaching of public health nurses and other public health workers. The national study, made by your own nursing group, is often quoted. We are wondering if most of these studies have missed the mark of true evaluation. Some of us are counting the number of lives saved, instead of the fate to which we save them; some of us are counting the activities of the public health workers, the number of clinics, the talks, the visits, and the literature distributed, instead of the changed behavior on the part of those to whom service is given; some are recording what the *nurse does* and what she *tells* the patient in home visits, rather than the questions which the family ask and the changed living in that home as a result of the nurse's visits *over a period of time;* some of us are checking health knowledge and the routine following of health habits, rather than evidence of intelligent living of individuals and groups.

It seems to me that true evaluation of public health education should be based upon growth in learning, which

will manifest itself in the increasing number of persons who learn how to think and how to live intelligently in a coöperative society. Under this view of evaluation, we will look for a decrease in physical defects of school children and not our present vicious circle of finding and correcting defects. Thinking parents will prevent the development of many of these defects in the prenatal and preschool periods. We will look for a decrease in the number of uninvited home visits of the public health nurse, for thinking parents will seek medical and nursing aid because they know its value. We will find an increasing number of private physicians practising preventive medicine, for thinking physicians will give this service at the request of thinking adults who seek it.

This type of evaluation may appear visionary and academic but the three volume report of the Hearings before the Sub-Committee on Education and Labor in the United States Senate,[5] in reference to the bill to establish a National Health Program, indicates clearly the need for a different type of evaluation, as well as a different type of educational program. The public has been aroused and awakened to the need for medical science in individual and group living for *all* people. Our past evaluations of services rendered have been based largely upon our efforts with the lower one-third of the nation's population.

SUMMARY

In summary, may we state that because public health is a combination of medical science and education, and because so many workers have entered the field of public health from other professions, all of us need to gain a united concept of the philosophy of public health and the principles of human learning in a changing social order. Public health nursing can no longer stand alone as a separate organization or profession any more than public health can be segregated from medical science. Public health nursing must become an integrating force within the science and art of public health.

Our problem is not one of coördinating the existing educational program of all health workers. It is a problem of working out together a new program of public health education which is based upon service rendered in the educative way by every public health worker.

REFERENCES

1. Olsen, Willard C. *Research Studies in Child Growth—1937–39.* University of Michigan, Ann Arbor, Mich.

2. Wellman, Beth. *Research Bulletins—1930–39.* Child Welfare Station, University of Iowa.

3. American Public Health Association. *Appraisal Form for Local Health Work* (Committee on Administrative Practices), 1938, p. x.

4. *Pub. Health Rep.*, Oct. 29, 1937.

5. *Report of Hearings of Sub-Committee on Education and Labor of the U. S. Senate.* Vols. 1, 2, 3, 1939. Washington, D. C., Superintendent of Documents.

A Study of an Epidemic of Brucellosis Due to Brucella Melitensis*

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DURING a period extending from December 10, 1938, to February 10, 1939, there occurred at the Michigan State College, 45 clinical cases of brucellosis, of which one terminated fatally. Of the total, 41 were college students, one a laboratory stockroom attendant, one a plumber, one a stenographer, and one a salesman.

This report deals chiefly with an analysis of apparent conditions that were investigated to determine the source of the infection and the results of laboratory diagnostic tests made on the clinical cases and other individuals thought to be directly involved.

Not until most of the clinical cases of the disease had occurred and their location with respect to each other in residence and in college courses prior to and during the epidemic established, was it possible to suspect a probable center where exposure to infective material might have taken place.

The search for the source of the infection was considerably narrowed due to the fact that only *Brucella melitensis* was isolated from the blood of the cases. This species has never been recovered from an animal source in this territory in recent years, and furthermore, all milk used by the students at the college is pasteurized.

A positive diagnosis of brucellosis was established from the combined results of the Brucellergen skin test, the agglutination test, the phagocytic test, and blood culture.

The onset of the first case was on December 10, 1938. A positive diagnosis was made by laboratory tests on December 20, 1938. The individual in question was employed as a student assistant in a laboratory of the bacteriology building located near the *Brucella* laboratory. Since several cases of brucellosis have occurred in past years in individuals directly associated with brucellosis investigations, the occurrence of infection in this individual was not considered as unusual. On January 7, 1939, a second case was diagnosed as brucellosis by blood culture and other laboratory tests. The date of onset was December 27, 1938. This individual, a member of the faculty, had taken a laboratory course in bacteriology during the fall term extending from September 26 to December 23, 1938. During the second week of the winter term, from January 5 to March 24, 1939, several students who had become ill during the Christmas vacation or shortly after they returned to the college campus, entered the college hospital for observation and treatment. A diagnosis

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of brucellosis was made within 24 to 48 hours after entry. Three students who became ill at home during the last week of December were unable to return for the second term. A diagnosis of brucellosis was made by their local physicians.

The investigation revealed that 21 of the clinical cases were in students enrolled in the veterinary division; the others were enrolled in either the science, the agricultural, the home economics division, or the graduate school. It was also found that a majority of the cases, regardless of their divisional classification, were more closely associated together at the same time in 3 of the 15 laboratory classes in the bacteriology building than in other classes in other buildings during the fall term.

During the fall term there were 369 students taking laboratory courses in one or the other of the 11 sections of bacteriology, one of the 3 sections of parasitology, or in poultry hygiene. There were also about 350 students taking one or more lecture courses in bacteriology during the fall term. The laboratory courses in bacteriology were divided into one or more sections of 2 hour periods held either 3 or 5 days of each week. The bacteriology and parasitology laboratory classrooms were located on the second and third floors of the building. The course in poultry hygiene was held in the basement floor annex of the building. All but 2 of the clinical cases among students had taken one of several laboratory courses in the bacteriology building during the fall term of the college year. One of the 2 exceptions was a student laboratory assistant working in a laboratory on the basement floor near where the *Brucella* investigations are housed. Another had visited one of the two student laboratories on three occasions during the fall term. He stated emphatically that he neither drank water nor washed his hands while in the laboratory. The stockroom attendant was in charge of the student laboratory supplies room located on the second floor of the bacteriology building. The plumber installed an autoclave on the first floor of the bacteriology building during the third week of December. He also worked in the basement while connecting the steam line to the autoclave. The stenographer was located in a small library room on the first floor of the bacteriology building. She was in the habit of making daily visits to the *Brucella* laboratory located in the basement of the bacteriology building. The salesman called at the office of the stenographer just mentioned on December 13 just long enough to leave advertising matter. At this time he visited no other part of the building. He again visited the same part of the building on January 2 for only a few minutes.

As soon as it became apparent that an unusual number of students were affected, that the infecting organism was *Brucella melitensis*, and that all the students, with 2 exceptions, had taken one of the laboratory courses in the bacteriology building, a survey was begun of all students who had taken laboratory courses in bacteriology and parasitology to determine whether the exposure had centered around any of these classes. Previous studies have already revealed that the results of the Brucellergen skin test, agglutination test, and the phagocytic test often reveal what might be termed "latent" or subclinical infections in groups of individuals who, at the same time, are exposed to infective material, which gives rise to clinical infections. In addition to the above named tests, a blood and throat culture was made on as many students as possible, beginning the second week of January and extending to the first week of February. The results of the laboratory tests on all students who were examined are pre-

TABLE 1

Incidence of Brucellosis in Students According to Day and Hours Present in Laboratory

		Day and Hours in Class						Students			
Class	*Sec.*	*Mon.*	*Tues.*	*Wed.*	*Thur.*	*Fri.*	*Sat.*	*Total*	*C.I.**	*S.C.**	*Not Tested*
201b–304	2	3– 5	3– 5	3– 5	3– 5	3– 5	.....	40	11	12	4
201b	2	.....	10–12	.....	10–12	.....	10–12	20	0	2	2
201b	3	10–12	.....	10–12	.....	10–12	.....	33	14	13	0
201b	4	1– 3	.....	1– 3	.....	1– 3	.....	37	0	1	12
201b	1	.....	8–10	.....	8–10	.....	8–10	9	0	3	0
304e	..	1– 3	.....	1– 3	.....	1– 3	.....	24	2	3	6
201b–304	1	8–10	8–10	8–10	8–10	8–10	.....	28	7	6	2
304a	2	10–12	.....	10–12	.....	10–12	.....	26	0	0	0
304a	1	.....	10–12	.....	10–12	.....	10–12	8	1	0	0
304c	..	.....	1– 3	.....	1– 3	.....	10–12	10	0	0	0
201a	5	3– 5	.....	3– 5	.....	3– 5	.....	21	0	0	0
P306	1	.....	2– 5	.....	.....	.....	.....	27	0	0	4
P306	2	.....	.....	2– 5	.....	.....	.....	23	3	6	2
P306	3	.....	.....	.....	3– 6	.....	.....	43	0	0	1
Total								349	38	44	33

* C.I. = Clinical infection
* S.C. = Subclinical infection

sented in Table 1. The results show that most of the clinical and subclinical infections were confined to 3 laboratory classes in bacteriology held on either the second or third floor. The 3 cases in one section in parasitology were also taking poultry hygiene.

Since the results of the laboratory tests indicated that the bacteriology building was the focus from which the cases originated, each possible way in which the infective material might have reached the individuals was investigated. The findings of the investigations which were conducted in cooperation with members of the State Department of Health, follow:

1. *Laboratory experiments*—There were no cultures of *Brucella* or materials containing *Brucella* issued to students in any of the laboratory classes during the fall term. No cultures of *Brucella* were used on the first, second, or third floors of the building during this period.

2. *Contact with the Brucella laboratory*—Only one of the clinically infected students had ever been inside the *Brucella* laboratory, and only a small number of the cases had ever been on the basement floor where this laboratory is located. Two of the students in one of the classes in which several cases occurred were employed a few hours each week in the *Brucella* laboratory and laboratory tests made early in the fall term showed that they were immune to *Brucella* infection. The *Brucella* laboratory (B. Fig. 1) was not a completely closed unit. The 37° C. room used by the laboratory was located off of a hallway in the basement. Used glassware, often containing live organisms, was carried in closed containers to a washroom (D. Fig. 1) located in the annex to the basement to be sterilized, washed, and processed for further use. The students in the class in poultry hygiene and the student assistant, who was the first one to develop clinical infection in December, were the only ones who were in or close to the washroom.

An inclosed Sharples centrifuge which was used for centrifuging live *Brucella* organisms was located in the hallway of the basement. The centrifuge had been used for this purpose more than 100 times since 1929. The last time *Brucella melitensis* was centrifuged before the epidemic, was in the second week of November, 1938.

3. *Contamination of water supply from sewerage*—The water from faucet openings in the bacteriology building has been examined at intervals for several years by Dr. W. L. Mallmann. At all times the bacterial count has been low and it has been free from fecal contaminating organisms.

4. *Contamination of water supply from back siphonage*—The possibility that back siphonage from a sink in the *Brucella* laboratory or from the basement washroom might have been the means by which the students became infected was considered from the beginning. In order to prove such a hypothesis, one must actually produce siphonage from a sink under average working conditions. One must also show that the procedure of washing glassware in the washroom

would permit siphonage when and if a negative pressure existed in the connecting cold water line in the building. Furthermore, one must prove that the glassware and culture media containing live organisms was not sterilized before washing.

R. J. Faust, Sanitary Engineer for the State Department of Health, after many trials succeeded in producing siphonage of water colored with fluorescein through the cold water faucet at the basement washroom sink and into the main water line passing backward through the south side of the basement.

The water supply to the building entered the basement at 1, Fig. I. The pipe extended through the entire length of the basement of the washroom D located on the south side of the building annex. The faucet opening at the washroom sink was located 2 feet higher than those located in laboratories in the main basement. The water supply to the *Brucella* laboratories, to a lavatory, and two research laboratories on the first floor of the building was carried through a common pipe off of the main line. Water for the third floor student laboratory was obtained through two vertical extensions connected at 2 and 6. Extension 6 was a small pipe and also carried water to a small research laboratory on the first floor. The second floor laboratories obtained their water supply through a vertical pipe extension connected at 5.

Back siphonage was accomplished only by completely closing the valve of the water main where it entered the building at I, and at the same time closing all water faucets on the first, second, and third floors of the building. While the valves just mentioned were closed, a rubber hose was attached to the washroom cold water faucet, SD, and immersed in a basin of water containing fluorescein. The faucets in the basement laboratories A1, A2, and A3 on the south side of the building and directly off of the main water line were then opened, thus permitting the water in the main pipe to drain out. The emptying of the main pipe established a negative pressure at the washroom faucet and when opened, back siphonage occurred. After fluorescein water had collected in the main water line running through the basement, all basement faucets, including the one in the washroom D, were closed. The main valve to the water line entering the building was then opened. When the water faucets on the upper floors were opened, the water pressure in the main line forced the fluorescein water upward and out through faucets on the second floor laboratories and one on the first floor laboratory fed through pipe 6. Not until a valve in feeder pipe 2, leading to the third floor was closed, was it possible to force fluorescein water through feeder pipe 6, up to the third floor student laboratory. At no time during the siphonage experiment, however, or after the water pressure was restored, was there any fluorescein water obtained from the faucet openings located on the north side of the basement floor in the *Brucella* laboratory, or those extending to the first floor at 3 and 4.

It is obvious from the foregoing description that the production of experimental siphonage in the bacteriology building was a complicated procedure which required considerable time and thought.

If siphonage of water containing live pathogenic organisms from the washroom sink had occurred at some subsequent time unknowingly, the following conditions would have had to exist at or near the same time:

1. Valve I of the water main entering the building turned off.
2. The valve of the vertical extension at 2 turned off.
3. All faucets on the upper floors closed.
4. One or more faucets in basement laboratories A1, A2 and A3 opened.

KEY TO FIGURE I

A1, A2, A3, A4, A5. Research laboratories
B. Brucella laboratories
C. Animal room
D. Washroom for basement glassware
E. Storage for glassware
F. Icebox
G. Storage
H. Hall
I. 37° C. room
K. Sharples centrifuge
S. Sink

1. Water line entrance to building
2. Water line extending to third floor student laboratory
3. Water line to first floor lavatory
4. Water line to first floor laboratory
5. Water line to second floor student laboratories and washroom
6. Water line to first floor laboratory and third floor student laboratory
7. Faucet outlet for watering experimental animals

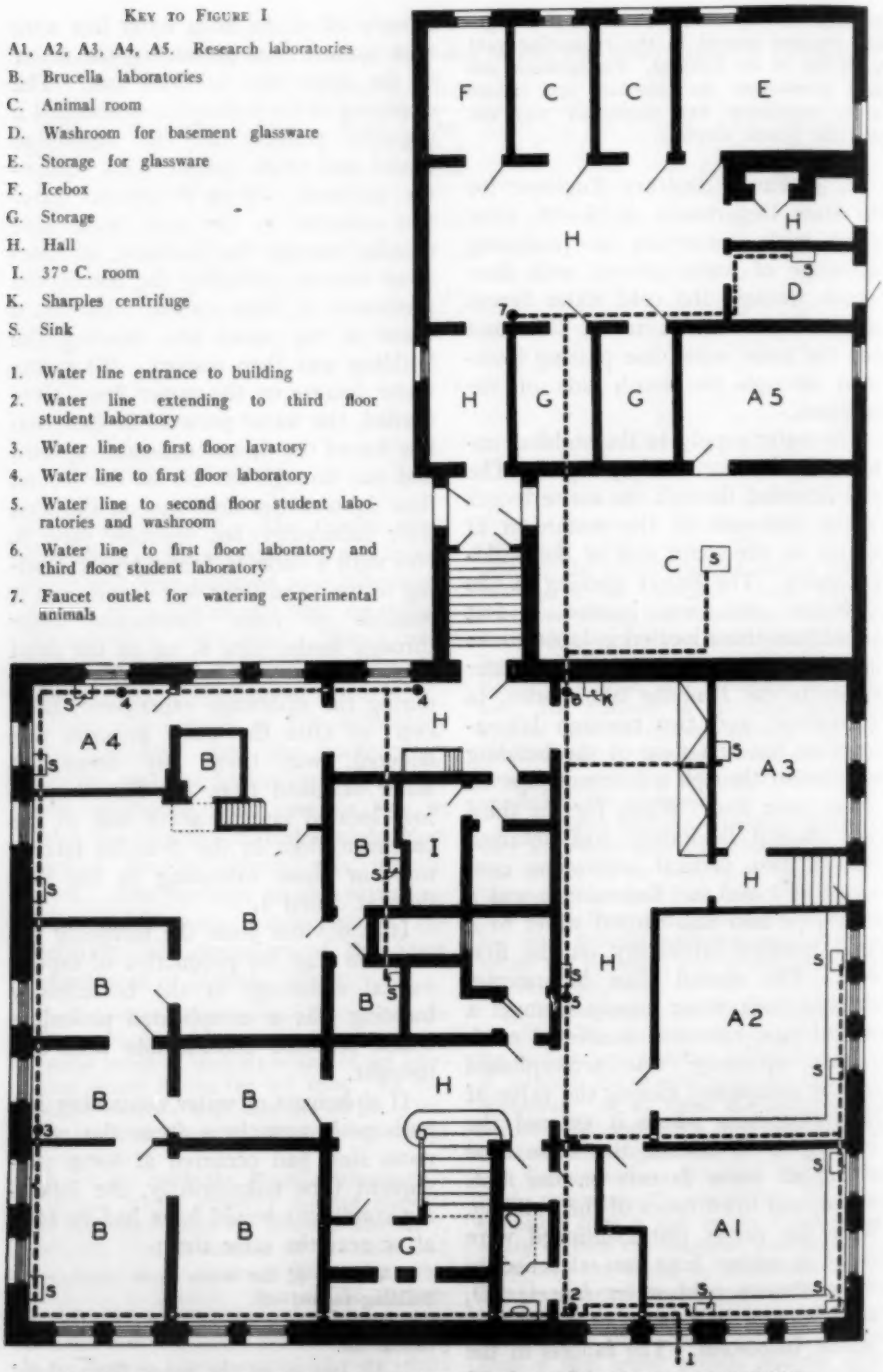

FIG. I - BASEMENT FLOOR PLAN OF BACTERIOLOGY BUILDING

5. A rubber hose attached to the faucet in the basement washroom, and the hose extended under water containing the washings from unsterilized glassware; the faucet being opened shortly after the other water faucets were opened in the basement.

6. The glassware containing *Brucella* organisms not properly sterilized before placing in the sink.

The information which was obtained from the plumbing department of the college and from the woman who washed the glassware failed to furnish any evidence on which one could conclude that point (1) or (5) ever existed. The superintendent of the plumbing department stated that the water main valve to the building was never turned off during the fall term. An extension hose had never been used on the cold water faucet and, due to the difference in size of the hose and faucet opening, the woman attendant demonstrated in the presence of several individuals that she was unable to slip the hose over the faucet opening.

Point (6) was thoroughly investigated by the authors. It was found that when the copper boxes used for collecting discarded glassware were packed to capacity with Petri plates and test tubes containing liver agar cultures, covered and placed in flowing steam, all *Brucella* cells were not killed at the end of 30 minutes, but were after 1 hour. All of the agar medium in the Petri plates was not completely liquefied at the end of 1 hour. It is not necessary that the temperature be raised to the liquefaction point of 2 per cent agar medium in order to kill *Brucella*. In view of the fact that the sterilization and washing of the glassware from the *Brucella* laboratory was not always closely supervised, it is possible that at times adequate sterilization was not practised.

There remains still another important question that must be answered in the affirmative before one can prove that live *Brucella* organisms were siphoned into the main water line of the building during the fall of 1938 or at any other time. The question is, were there any unexplained *Brucella* infections in the normal stock of guinea pigs and rabbits that were housed in a room near the washroom in question during the fall and winter of 1938? Approximately 150 normal guinea pigs and 20 rabbits were watered daily from a branch pipe leading from the main water line at 7, near the washroom and from which fluorescein water was obtained during the siphonage experiment. Since guinea pigs and rabbits are easily infected with *Brucella* by the oral route, one would expect to find a considerable percentage of them infected if they drank water which contained a sufficient number of *Brucella* organisms to infect human beings. That this situation never existed was established by negative findings in all the normal stock of guinea pigs and rabbits when examined for *Brucella* infection during the months of February and March, 1939. It might be added that several thousand guinea pigs have been used in this laboratory during the past 24 years and have always received water from the same outlet. There is only one instance of infection occurring among the normal stock. This happened in 1920, when they were housed in the same room with experimentally infected guinea pigs.

The failure to find *Brucella* infection in the normal stock of animals and lack of any proof that the valve controlling the water main leading into the building was ever closed during the fall term would lend little, if any, support to the hypothesis that live *Brucella* organisms were ever siphoned into the water supply of the bacteriology building during the fall or winter months of 1938, prior to the brucellosis epidemic.

Contact transmission—There is circumstantial evidence, but no positive proof that the epidemic might have originated from carriers and spread from one person to another as a result

of working or being associated together for a period of time. In order to prove that the infections arose as a result of contact instead of from one single source, it is necessary first to discuss and weigh all the evidence in favor of and against mass exposure to one particular source of live organisms over a period of one day, and that in favor of and against contact exposure extending over a period of several days.

The most convincing evidences in favor of mass exposure are: (1) all clinical cases had been in the bacteriology building during the month of December, 1938; (2) at least 35 of the 41 clinical cases in students had been in classes on either the second or third floor student laboratory for 2 hour periods during the same 3 or 5 days of the week. Now, if mass exposure occurred in the laboratories from a single source such as the water supply on one particular day, one should be able to show: (1) that clinical and subclinical cases occurred among members of all the classes that were present on that day, (2) that the majority of the clinical and subclinical cases were present in the same classes on the same day.

In order to show whether one or both of the conditions just mentioned existed, all students who were present in all classes in both laboratories on each class day of the week were grouped together and the total number of infections that occurred among those present on each of the days tabulated. The results of this tabulation are set forth in Table 2. If the 3 clinical cases which were taking both poultry hygiene and parasitology became infected while in the basement of the building, then 34 of the remaining 35 clinical cases and the majority of the subclinical cases were in the laboratories in one or three classes on the same days, namely: Monday, Wednesday, and Friday. The one remaining case, although scheduled for class work on Tuesdays, Thursdays, and Saturdays, was in the second floor laboratory on other days of the week as well. If mass exposure occurred in the laboratories on one day, the data in Table 2 would indicate that only Monday, Wednesday, or Friday could be considered. Now if the exposure occurred on one of the three mentioned days from the water supply, it is logical to expect and one should find some evidence of the exposure in all classes present on one of the three days.

TABLE 2

Incidence of Brucellosis in Students According to Total Number Present in Laboratory on Each Day

	8–10				10–12				1–3			
	Total	*C.I.**	*S.C.†*	*No Test*	*Total*	*C.I.*	*S.C.*	*No Test*	*Total*	*C.I.*	*S.C.*	*No Test*
Mon.	28	7	5	2	59	14	12	0	61	2	7	18
Tues.	35	7	7	2	28	1	4	2	10	0	0	0
Wed.	28	7	5	2	59	14	12	0	61	2	7	18
Thur.	35	7	7	2	28	1	4	2	10	0	0	0
Fri.	28	7	5	2	59	14	12	0	61	2	4	15
Sat.	9	0	2	0	38	1	4	2	..	..	..	..

	3–5				3–6				Total No.			
	Total	*C.I.*	*S.C.*	*No Test*	*Total*	*C.I.*	*S.C.*	*No Test*	*Present*	*C.I.*	*S.C.*	*No Test*
Mon.	61	11	13	4	..	..	..	..	209	34	37	34
Tues.	67	11	16	8	..	..	..	..	140	19	27	12
Wed.	84	14	14	6	..	..	..	..	232	37	38	26
Thur.	83	11	15	5	43	0	2	1	199	19	28	9
Fri.	61	11	13	4	..	..	..	..	209	34	34	24
Sat.	..	..	..	..	..	..	..	..	47	1	6	2

* C.I. = Clinical infection
† S.C. = Subclinical infection

TABLE 3

Incidence of Brucellosis in Classes Present in Laboratory on Wednesday

Class	*Floor*	*Hours*	*Total*	*C.I.**	*S.C.†*
201b–304	2	8–10	28	7	5
201b	3	10–12	33	14	12
304a	2	10–12	26	0	0
201b	3	1– 3	37	0	3
304e	2	1– 3	24	2	4
P306	2	2– 5	23	3	1
201b–304	3	3– 5	40	11	13
201b	2	3– 5	21	0	0
Total			232	37	38

* C.I. = Clinical infection
† S.C. = Subclinical infection

If the data presented in Table 1 and Table 3, relative to the total number of infections occurring in each class present on Wednesday, are examined closely, it is seen that three classes containing 84 students in which no clinical infections occurred, were present on each of the same three days when four classes, accounting for 34 clinical infections were present. Since no clinical infections occurred among the 84 students in the three classes on the three days, it is difficult to see how mass infection could have taken place on the same day in the other four classes from a source such as the water supply. Further, there is no relation between those infected and the floor of the building on which they were working.

There were 2 students enrolled in the veterinary division during the fall term of 1938 who were found to be affected with the chronic form of brucellosis in October, 1938. *Brucella melitensis* was isolated from the blood of both. The date of onset in one case was June 28, 1938, the other in July, 1938. One had taken a laboratory course in parasitology in the bacteriology building during the spring term, March to June, 1938. The other had taken no courses in the bacteriology building during the period just mentioned. The two students in question did not take any course work in the bacteriology building during the fall term of 1938. There was obtained no positive evidence that the 2 students in question were the source of infection in the large group of students.

During the epidemic there was found only 1 case in which the possibility of contact infection was indicated. All laboratory tests conducted on the student on January 27, 1939, were negative. On February 10, the student became ill and on February 13, was examined for brucellosis. All tests, including the blood culture were positive. Since the student was also among the members of one class in which several infections occurred, the infection may or may not have been transmitted by contact.

Before one can say definitely that the exposure to infective material occurred on one particular day, he must decide whether the case whose onset was on December 10 was exposed to the same source and at the same time as those that developed later. The fact that the type of organism involved in this case, as well as in the others, was *Brucella melitensis* would indicate that all were closely related. But since the dates of onset between the first and last case are so wide apart it is still a debatable question whether all were exposed at the same time and to the same source.

RESULTS OF THE DIAGNOSTIC TESTS

The circumstances and conditions under which the epidemic developed

made it possible to apply all known diagnostic tests to those involved, and furnished an opportunity to gain valuable information as to their value in aiding in the early diagnosis of brucellosis.

As quickly as cases were suspected on the basis of clinical symptoms and signs, a skin test was made with Brucellergen and blood was collected for the agglutination and opsonic tests, and for culture in Tryptose broth. The procedures used in conducting the tests have been described previously.[1] The same tests were made on most of the other students who were in the laboratory classes in bacteriology and parasitology during the fall term. The tests were made on the volunteer group as rapidly as possible between January 15 and 30, 1939. The results of the laboratory tests in 41 clinical cases, and 49 classified as subclinical are summarized in Table 4.

TABLE 4

Comparison of the Results of the Agglutination Test with Results of Other Laboratory Tests on 41 Clinical and 49 Subclinical Cases of Brucellosis

Total No.	*Clinical Cases 41*				*Sub-clinical Cases 49*			
Maximum Agglutination	*Neg.*	*1:25*	*1:50*	*1:100 or Higher*	*Neg.*	*1:25*	*1:50*	*1:100 or Higher*
Titers, No.	4	12	7	18	26	8	6	9
Blood Culture, Positive	3	12	7	13	1	0	1	1
Brucellergen Test, Negative	0	0	0	0	1	1	1	0
Brucellergen Test, Positive	4	12	7	18	25	7	5	9
Phagocytosis, Low or Moderate	3	10	6	14	16	6	4	7
Phagocytosis, Marked	1	2	1	4	0	1	1	2
Phagocytosis, Negative	0	0	0	0	10	1	1	0

The results of the blood cultures, the skin test, and phagocytosis test on each case are grouped together according to their maximum agglutination titers. Of the 4 clinical cases whose blood sera were negative to the agglutination test, 3 showed a positive blood culture on the same date. The blood examinations in 2 of the 4 cases were made 10 days and 7 days after onset and in one, 3 days before the onset. The blood culture was positive in 12 other clinical cases which at the time showed a maximum agglutination titer of 1:25. Data showing the interval between the date of onset and the date the agglutination test was made and titer obtained are set forth in Table 5. The intervals varied from 1 to 80 days. There does not appear to be any relationship between the strength of the titer and the time the test was made after onset.

The Brucellergen skin test was positive in all clinical cases. The size of the local reaction varied from 2 to 6 cm. The results of the phagocytosis test were confusing in 8 of the 41 clinical cases in that the phagocytic picture was similar to that observed in immune individuals. These results agree in many respects with the results of the phagocytic tests conducted on *Brucella melitensis* infected individuals on the Island of Malta. In many cases of *Brucella melitensis* infection most of the leukocytes in the patients' blood in a phagocytic system show a marked phagocytosis of *Brucella* cells. It is obvious from the results of each of the laboratory tests, that one cannot place too much reliance on any one test to confirm the early diagnosis of clinical brucellosis. The results of all the available tests taken together must be carefully analyzed in arriving at a positive diagnosis.

In considering the results on the group classified as subclinical cases, one

TABLE 5

Results of the Agglutination Test and Blood Culture on 41 Clinical Cases of Brucellosis

Case No.	Date of Onset	Date of Tests	Blood Culture	Maximum Agglutination Titer
1	12-10-38	12 20-38	+	negative
2	12-19-38	1-30-39	+	+1:25
3	12-26-38	3-17-39	not taken	+1:500
4	12-27-38	1- 7-39	+	+1:200
5	12-27-38	2- 1-39	+	+1:50
6	12-28-38	1-13-39	+	+1:500
7	12-28-38	1-17-39	+	+1:50
8	12-28-38	1-27-39	—	+1:500
9	12-28-38	1-17-39	+	+1:50
10	12-28-38	1-12-39	—	+1:100
11	1- 5-39	1-13-39	+	+1:50
12	1- 5-39	1-23-39	+	+1:100
13	1- 5-39	1-24-39	+	+1:500
14	1- 6-39	1-28-39	+	+1:200
15	1- 6-39	1-13-39	+	negative
16	1- 6-39	1-12-39	+	+1:25
17	1- 6-39	1-14-39	+	+1:100
18	1- 6-39	1- 9-39	+	+1:50
19	1- 7-39	1-12-39	+	+1:25
20	1- 7-39	1-23-39	+	+1:500
21	1- 8-39	2- 1-39	+	+1:500
22	1- 9-39	1-13-39	+	+1:25
23	1-10-39	2-14-39	+	+1:100
24	1-10-39	1-19-39	+	+1:25
25	1-12-39	1-14-39	+	+1:25
26	1-13-39	1-14-39	+	+1:25
27	1-13-39	1-20-39	+	+1:25
28	1-13-39	1-24-39	+	+1:50
29	1-15-39	1-19-39	+	+1:50
30	1-16-39	1-19-39	+	+1:25
31	1-19-39	1-24-39	+	negative
32	1-20-39	1-24-39	+	+1:25
33	1-20-39	1-25-39	+	+1:50
34	1-23-39	1-24-39	+	+1:100
35	1-25-39	2- 9-39	—	+1:500
36	1-30-39	1-27-39	—	negative
37	2- 1-39	2-18-39	+	+1:200
38	2- 3-39	2- 1-39	+	+1:500
39	2- 5-39	2- 1-39	+	+1:25
40	2- 7-39	2- 6-39	—	+1:100
41	2-10-39	2-13-39	+	+1:25

+ = complete agglutination or positive blood culture
— = no agglutination

must take into consideration the possibility that many of them may have been exposed to infection several months or years before the fall of 1938. The results of laboratory tests conducted on groups of students during the past several years reveal that from 10 to 15 per cent may have at one time been infected with *Brucella*. The results of the phagocytic test, however, in which only 4 of the subclinical group show a high phagocytosis, would indicate that most of them were exposed to infective material on or near the same date as the clinical cases. Data which tend to confirm this view are shown in Table 1 from the class location of most of the subclinical cases. The largest number of subclinical infections were among those in the 3 classes in which most of the clinical infections occurred.

It is interesting to note that a positive blood culture was obtained from each of 3 of the cases which failed to show the slightest symptoms of the disease before or after culturing. The 3 cases in question showed a positive skin test and moderate degree of phagocytosis at the time the blood cultures were taken. The skin test was negative

in three of the subclinical cases. Two of these showed specific agglutinins at the time of the skin test.

The data set forth in Table 4 show conclusively that it is possible to demonstrate active infection long after exposure to infective material in individuals who never develop clinical manifestations of brucellosis. In other words, active infection in the case of brucellosis does not necessarily imply clinical infection.

The period of incubation in each clinical case that arose during the epidemic is difficult to determine since the exact date or dates of exposure can only be surmised. The onset of the first case was on December 10, 1938; the last on February 10, 1939. If the exposure occurred during the first week of December, the incubation periods would vary from a few days to approximately 2 months.

SUMMARY

During the brucellosis epidemic which occurred at the Michigan State College in the winter of 1938–1939, 45 individuals developed the clinical form, and possibly 49 the subclinical form of the disease. Of the 45 clinical cases, 41 were students, 1 a stenographer, 1 a plumber, 1 a stockroom attendant and 1 a salesman.

Brucella melitensis was cultured from the blood of 36 of the clinical and 3 of the subclinical cases. No other species of *Brucella* was involved.

All possible sources of the infective material responsible for the epidemic are mentioned and discussed.

It has been pointed out that if the infecting organisms came through the water supply of the building due to back-siphonage, certain conditions affecting the water supply would have to exist almost simultaneously. There was no proof obtained that any of the conditions necessary for back-siphonage had occurred in the building during the fall and winter of 1938.

The most convincing evidence in support of the hypothesis of mass infection is the occurrence of the majority of both the clinical and subclinical cases in three laboratory classes.

The hypotheses that have been offered to explain the source of infective material, when subjected to a critical analysis, lack sufficient proof to explain how the epidemic originated.

The results of the different laboratory diagnostic tests show that no one test is always sufficient to confirm the diagnosis of clinical brucellosis shortly after onset. The combined results of all the laboratory tests show that active infection and clinical infection are not synonymous. One may be infected with *Brucella*, and yet never show clinical symptoms of the disease.

REFERENCE

1. Huddleson, I. Forest. *Brucellosis in Man and Animals.* New York: The Commonwealth Fund, 1939.

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PUBLIC HEALTH AND THE WAR IN ENGLAND

THE evacuation of cities in England at the beginning of the war in the fall of 1939 was "the greatest evacuation in history." Figures now available are of considerable interest to us in this country. Of the 3,644,000 evacuable persons, only one-third consented to the movement, but in 4 days 1,270,000 people were moved from London and other cities to reception areas. Of these, 166,200 were mothers or adults, accompanied by 260,300 young children; 12,291 were expectant mothers; and 734,883 school children who were unaccompanied by mothers. There were also some 5,000 blind and crippled, teachers, and other helpers. The tremendous and sudden increase in the school population in the reception areas is evident. The success of the movement from the public health standpoint was remarkable to an unexpected extent. The evacuation took place at the beginning of September, which is a healthful period, especially as concerns droplet infection, as occurs in measles, whooping cough, and influenza. The incidence of poliomyelitis was one-third, and diphtheria and scarlet fever two-thirds of that for 1938. These good results must be attributed in part to the housing in billets and the absence of concentration camps, though the success of the huge movement without injury to the public health "was built to an enormous extent on the achievements for which medical officers of health have been responsible in years past." [1]

Equally satisfactory is a report on the health of the administrative county of London,[2] which is the only section of England in which the Registrar-General's weekly return gives mortality statistics in sufficient detail by cause and age.

There was a very substantial saving of life under 5 years of age, due largely to a remarkable fall in deaths from pneumonia, bronchitis, diarrhea, and whooping cough. Also the expected epidemic of measles which has occurred regularly every two years failed to appear. This break in the 2-year periodicity of measles is not believed to have been the result of chance, and occurred also in the large cities of Manchester and Liverpool. As the density of the child population in London was not much below normal at the end of 1939, it is probable that the closing of schools was responsible for the nonappearance of the usual outbreak.

This great benefit attributed to the closing of schools and the consequent dispersal of children did not favor those of school age to the same extent as those of the younger age as far as mortality is concerned, though deaths from diphtheria, measles, and whooping cough declined greatly.

In young adults there was a pronounced increase in mortality during the winter due to tuberculosis, bronchitis, respiratory diseases, and heart disease. The deaths from pneumonia did not increase although the winter was severe. For adults over 45 years of age there was a substantial increase in mortality during the severe winter months of January and February, largely due to respiratory and heart diseases, though the increase for pneumonia was less proportionately than for influenza and other respiratory diseases. A marked increase in deaths at ages 45–64 during 3 weeks in January and February is attributed to the prevalence of influenza, and cannot be charged to war conditions.

There has been a large increase in traffic deaths in the larger towns attributable to the blacking out process. Such fatalities were much greater when the moon did not shine than when it was full. All of these figures have been worked out in great detail by the medical statistical officer by methods which will be of interest to statisticians but which here need not be gone into further.

There are many interesting features in the reports which have come to us. While it was recognized that the closing of the schools of cities reduces the chances of the spread of infectious diseases, the epidemiologists feared that the carrying of city children into the rural areas would counterbalance this good effect, but their fears were not realized. The normal public health services of the urban hospitals were necessarily reduced. There was little infectious illness in the reception areas. The whole evacuation was a great success reflecting credit on those responsible for making and executing the plans.

REFERENCES

1. *Pub. Health*, May, 1940, p. 170.
2. Stocks, Percy. The First Seven Months: A Study of War-time Mortality in London. *The Lancet*, Apr. 20, 1940, p. 725.

"HEALTH EDUCATION AND PUBLICITY" A CONTINUATION AND AN EXTENSION

EVERY reader of the *Journal* recalls with gratitude the wealth of material gathered for him from the four corners of the continent by Evart G. Routzahn and presented to him month by month under the modest title "Health Education and Publicity."

This rich flow of usable information about movies, printed matter, books, radio scripts, and about every ingenious idea the mind of man could devise to educate the public in health matters, ceased with Mr. Routzahn's death last year. The department he had edited for years was discontinued because there was no comparable reservoir to be tapped to keep the stream at the same level.

The members of the Health Education Section, who could apply the ideas uncovered by Mr. Routzahn directly to their work, have felt increasingly the lack of a department of this character in the *Journal*. Early in the year, the Section Council set about determinedly to find a successor to Mr. Routzahn if

that could be done, or to propose another method of meeting the acknowledged need. As a result of their effort, a recommendation that the department be reëstablished was brought to the Editorial Board. The recommendation carried with it a request for the appointment of Dr. Donald B. Armstrong as Editor.

The name of Dr. Armstrong was one for the Editorial Board to conjure with. His capabilities for enlarging the scope of the department to include many things beyond the confines of health education were obvious. Just as Mr. Routzahn had given short and lively accounts of what health education workers were doing in terms of their accomplishments, so Dr. Armstrong was equipped to act, but with all public health as his province. Under the stimulation provided by the Council of the Health Education Section, therefore, the Board broadened the base of its recommendation, and voted to invite Dr. Armstrong to edit a new department under a new name, " with a strong health education flavor," but one which would draw from all ten sections for its content.

The Editorial Board takes pleasure in acknowledging its obligation to the Council of the Health Education Section for initiating a proposal which now results in an announcement it is happy to make—that the first issue of " Credit Lines," under the editorial direction of Dr. Donald B. Armstrong, assisted by his colleague John Lentz, will appear in the September *Journal*.

" Credit Lines " is experimental, the Editor insists, and the Board agrees. Readers are invited to make suggestions and comments.

TYPHOID FEVER IN THE UNITED STATES

IN a recent editorial we called attention to the 17th Annual Report on Diphtheria Mortality in Large Cities of the United States,[1] which was most encouraging. Following close on that comes the 28th Annual Report on Typhoid Fever.[2] It has been repeatedly said that typhoid fever is a vanishing disease, and the figures bear out the statement to a great extent. For 1939, 34 cities with an aggregate population of some 6 million went without a single typhoid death during the year. As the figures for the 1940 census are not available, local estimates by the health officers concerned have been used in calculating the rates. The total population of the 34 cities as taken from the American Medical Directory is approximately 5,694,000. While acknowledging a certain amount of inaccuracy, the report is most encouraging. It is especially interesting to note that among the 34 cities having no deaths from typhoid in 1939, 18 are included in the list which had no deaths from diphtheria during that year, which apparently indicates that the energies of the health department were widely distributed and not confined to campaigns against any single disease.

Further evidence is given in a table showing the total typhoid death rate for 78 cities, 1910–1939 inclusive. For the first of these years, 1910, there were 4,637 deaths, a rate per 100,000 of 20.54. By 1914 the deaths had fallen to 2,781, a rate of 11.8. From that time on there has been an almost steady decrease, only one year, 1925, showing a marked increase in deaths as well as rate. During the whole period there were only 5 years in which the steady descent in the rate was broken and in only one was the increase marked. The estimated population in 1910 was 22,573,435 with a death rate of 20.54, while in 1939 the population was 37,112,665 and the death rate had fallen to 0.65.

It must be remembered that these figures are based on reports from the larger cities of the United States. For certain ones the conditions are even better than the report shows, due to the fact that they serve as hospital centers for more or less wide areas, and through their method of keeping statistics the deaths are charged against them. For example, at least 12 cities claim that all their deaths from typhoid fever were in nonresidents, while 8 more state that one-third of the deaths reported were in nonresidents. In 1936 there were but 18 cities in the United States in which there were no deaths from typhoid fever; in 1937, 27; and in 1938, 29.

A special roll of honor includes 14 cities in which no death from typhoid fever has occurred in either 1938 or 1939, among which Bridgeport, Conn., has had no death in 6 years, Fort Wayne none in 5 years, South Bend, Ind., and Utica, N. Y., no death in 4 years, and Fall River, Lynn, Milwaukee, New Bedford, and Wichita have had no deaths for 3 years.

Further, no outbreak severe enough to be called an epidemic has been recorded in any of the 78 cities. Altogether, the report is most encouraging and confirms the observation that typhoid fever is a vanishing disease.

These gratifying results are due directly to control of water sheds, filtration plants, and chlorination. Scientific disposal of sewage and garbage has played its part. For ordinary control of the disease antityphoid vaccination is not recommended, but in times of flood disaster such as those in the Mississippi and Ohio Valleys, it has been most valuable and it is still recommended for vacationists who are going into unknown regions or into those in which the water supply is known not to be well protected.

REFERENCES

1. *J.A.M.A.*, May 11, 1940, p. 1875.
2. *J.A.M.A.*, May 25, 1940, p. 2103.

THE MESSAGE OF PWA

AS THE work of the Public Works Administration approaches completion, it is fitting that we review and appraise its nation-wide influences upon public health and comfort. Begun in the national crisis of providing work for the unemployed, it has had its effect in all but 3 of the 3,071 counties in the United States, with 16,648 useful and substantial contributions to the better life of the American citizen. From its inception in July, 1933, PWA energized the construction of approximately 70 per cent of all educational structures built in the country during the same period; 65 per cent of all sewage treatment plants; 65 per cent of public buildings; 50 per cent of water works; and 35 per cent of hospitals and allied public health facilities.

Through PWA, many states have progressed further in construction for safe disposal of sewage and other wastes and control of stream pollution in the 6 years since 1933 than in the previous 25 years. Over 1,700 sewerage projects costing approximately $480,000,000 were built, including 871 sewage treatment plants.

PWA pioneered to establish good public housing for the underprivileged and developed 51 large-scale projects before the United States Housing Authority was established to take over this work.

For water supply, PWA has done more than simply aid 2,607 systems at a cost of $321,000,000, including the installation of 888 new water works serving

1,600,000 persons. It has assured the construction only of systems providing water sufficient in quantity and suitable in quality to serve the community needs. It has stressed incorporation of treatment facilities where the water was high in iron, hardness salts, turbidity, color and corrosive qualities, so that more than 500 new treatment plants were installed. It has warned against the dangers to children's teeth of waters high in fluorine so that adequate precautions were taken by local authorities to provide suitable supplies for new systems. It has brought safe public water supplies to hundreds of communities of less than 1,000 population which could not afford them previous to PWA.

At a time when municipal credit was almost extinct, PWA developed acceptable standards for revenue bond obligations, clarified their validity and enforceability through legislation and correct interpretation, gave them more respectable standing in financial markets, purchased revenue bonds from incorporated communities, and thereby successfully financed the construction of hundreds of new water works, sewerage systems, electric and gas improvements, and various other public enterprises for communities with as few as 400 people.

With the public aroused by the school disaster in Texas and the earthquake experience in Los Angeles in 1935, PWA allotments replaced unsafe and obsolete small buildings with modern consolidated schools; provided new structures with improved heating, ventilation, lighting, sanitation, and recreational facilities in place of 1,582 overcrowded and outdated buildings; added 60,000 classrooms with seats for 2,500,000 pupils to our educational facilities to meet the needs of shifting populations and growing enrollments; helped set new high standards of fireproof and safety construction in school buildings; and in all aided 7,283 school and other educational building projects at a cost of $1,176,000,000.

Bearing in mind the findings of the National Health Conference that 60 per cent of the states had fewer hospitals than could be considered adequate and that the normal increase in hospital beds should be 25,000 a year, it is timely to note that PWA funds have provided 121,760 beds in approximately 600 new hospitals costing $368,000,000.

BOOKS AND REPORTS

Good Health and Bad Medicine—*By Harold Aaron, M.D. New York: McBride,* 1940. 328 pp. Price, $3.00.

This book deals with the common everyday medical situations in which the temptation to self-medication is strongest. Its topics include a motley list, but it does cover the everyday health problems of the everyday man and woman. The advice given is simple, practical, and in accord with accepted medical opinion. The fallacies in self-medication for headaches, constipation, indigestion, and similar common ailments, which may be minor in themselves or may signal the onset of more serious disease, is well illustrated. The book is a combination of health advice and debunking of commonly used and highly advertised nostrums, antiseptics, dentifrices, cosmetics, and similar products, many of which are sold to the public wholly or entirely on the basis of artificially stimulated wants, rather than genuine needs. Useful products are listed; also acceptable products which are unobjectionable in themselves, but on behalf of which certain claims should be disregarded. The statement that quinine need not be declared upon the label of proprietary medications under the new Food and Drug Act is an error. The Council on Pharmacy and Chemistry of the American Medical Association accepts mercurochrome as a bacteriostatic, whereas this book lists it categorically as non-acceptable and characterizes it as worthless, which is an extreme view.

The information about drugs, preparations, and appliances is naturally derived principally from reports of Consumers Union, since the author is medical consultant to this organization. Other sources, however, have been drawn upon, such as the U. S. Food and Drug Administration, the Fraud Order Division of the Post Office Department, and the Councils on Pharmacy and Chemistry, Foods and Physical Therapy of the American Medical Association, and the Council on Dental Therapeutics of the American Dental Association, as well as Agricultural Experiment Stations of several states.

The author gives due recognition to the importance and necessity of consulting a physician for any abnormal manifestations, other than the passing indispositions which are part of every individual's life. In the matter of self-medication he advises very few simple and entirely safe procedures, and cautions against the prolonged use of these, since apparently minor disease may progress or be the initial warning of serious conditions in which medical attention is not only essential, but must be invoked early to be effective. The book should be useful in the home, the school and the office of the health educator. W. W. BAUER

Manual for the Conduct of Classes for Expectant Parents—*By Ellen D. Nicely and Her Assistants. Cleveland: Cleveland Child Health Assn.,* 1939, 72 pp. Price, $1.00.

What is a city of approximately 900,000 population doing to reduce its maternal death rate? What has it accomplished in behalf of maternal welfare and how was it done? If you ask Cleveland, Ohio, these questions and many others are answered in a *Manual for the Conduct of Classes for Ex-*

pectant Parents, published by the Cleveland Child Health Association. Very fully and in detail this *Manual* tells the story of what has been and is being done in Cleveland to provide adequate maternity care.

The *Manual* consists of three parts. The first outlines a series of 9 lessons for expectant mothers and describes the content of instruction in sewing which is considered an important adjunct to the classes. Part two gives the content of 4 classes for expectant fathers, and part three outlines what is involved in a complete community program for maternal welfare. The *Manual* also provides excellent illustrations of all record and report forms used in the conduct of the classes.

Not the least part of the book is the Appendix which consists of 12 pages of statistical tables. Class attendance for the year 1938 is analyzed. Deliveries among class members, for the same year, are analyzed according to many classifications. Maternal and infant deaths are broken down by causes. The tables indicate that approximately one-fourth of all the expectant mothers in Cleveland in 1938 attended a class. It would have been interesting to have had in the *Manual* tables showing what happened to those expectant mothers who did not have the benefit of class instruction.*

A careful editing and proofreading would have added greatly to the accuracy and clarity of the *Manual*.

MARGARET REID

* An evaluation not appearing in the *Manual* has been made of the Prenatal Group Instruction Program in Cleveland, Ohio. The significance of the findings of this study should demand the thoughtful attention of all those interested in a reduction of maternal and infant mortality rates, especially neonatal death rates. A copy of the *Evaluation of the Prenatal Group Instruction Program in Cleveland* may be secured from the Cleveland Child Health Association, 1001 Huron Road, Cleveland, Ohio.

Non-Profit Hospital Service Plans *--By C. Rufus Rorem, Ph.D., C.P.A., Director, Commission on Hospital Service, American Hospital Association, Chicago. Published by American Hospital Association, Chicago,* January, 1940. 130 pp. (12 chapters, 5 appendices). Price, $.50.

No one has contributed more factual knowledge to group-plan hospitalization than the author of this booklet. Those interested in hospital management and the economics of medical care are familiar with other publications of Dr. Rorem dealing with the economics of the American hospital structure, method of its support, and the financial problems confronting the hospitals in the United States.

Non-Profit Hospital Service Plans tells the story of group hospitalization since its formative period and presents an excellent picture of the rapid growth of the movement in seven years, from an estimated enrollment of approximately two thousand in 1933 to four and one-half million subscribers in 1940.

The justifiable interest of the American Hospital Association in this movement and the part it has played in the development of group service plans is described, and the various types of plans in existence interpreted.

While it is pointed out in the preface of this brochure that it is not intended to serve as a manual, the reviewer is content that it can very well serve as a guide in the formation, development, and maintenance of prepaid hospitalization plans.

Chapters are devoted to organization, legal aspects, community sponsorship, types of contracts, rates, methods of enrollment, education of the public, etc. A model Enabling Act, and definitions of various common statistical terms are included in well prepared appendices.

This booklet will be of value to those interested in the whole subject of hospital service plans. This may well appeal not only to hospital executives

and trustees, but members of social agencies and others, community minded and interested particularly in the economic aspects of hospital and medical care. CHARLES F. WILINSKY

Convalescent Care: Proceedings of the Conference Held Under the Auspices of the Committee on Public Health Relations of The New York Academy of Medicine, November 9–10, 1939—*New York: New York Academy of Medicine* (*2 East 103 St.*), 1940. 261 pp. Book being distributed free to the profession within limits of 1,500.

This book records the proceedings of the conference on convalescent care held under the auspices of the Committee on Public Health Relations of the New York Academy of Medicine on November 9 and 10, 1939. Men and women of national eminence in the fields of medical and surgical care, psychiatry, social work, and hospital management presented papers and discussed all of the factors which are involved in the problem of adequate convalescent care. As aptly pointed out by one of the speakers, convalescent care in its present status may be regarded as, "the unfinished business of medicine." The importance of its being a "continuing service" following medical, surgical, and other forms of patient care was further stressed. It was particularly emphasized that even communities which may be found to offer adequate facilities for the care of the acutely ill are invariably found lacking in the necessary facilities for convalescent and chronic care.

The importance of integrated effort on the part of the medical profession, social worker, and the nurse, as well as the varied aspects of convalescent care to meet the requirements of different types of patients and those suffering from many types of illness was authoratatively emphasized.

The social and administrative aspects of convalescent care, the advantages and disadvantages of institutional versus domiciliary convalescence, the question of the location of the convalescent unit in relation to the proximity of the general hospital received adequate emphasis.

Thirty pages are devoted to an excellent summary of the various phases discussed, and a long range program is outlined for necessary financing to meet the needs of increased facilities for convalescent care.

This book is recommended to all who have an interest in this very essential phase of complete and satisfactory medical care.

CHARLES F. WILINSKY

Public Health Dentistry and Health Security. A text-workbook for students and practitioners—*By Alfred J. Asgis, D.D.S., Ph.D. New York: Clinical Press,* 1939. 122 pp. Price, $3.50.

This outline was prepared to give the student of public health dentistry a general conception of the aims and activities of dentistry in public health and to meet the immediate needs of classroom instruction in social and educational dentistry. Essential materials are presented as used in the author's course in public health dentistry sponsored by the Division of General Education of New York University during the academic year 1938–1939.

The book is divided into 6 learning-teaching units which follow introductory chapters dealing with a review of the field and with a discussion of the scope of dental health education. Reference material is included at the end of each chapter or unit. Sample tests and programs are given in a final section.

An introductory chapter discusses the scope, programs, personnel, coöperating agencies, and criteria for the evaluation

of public health programs. The general aim of a dental health program is "to educate the public through the school children, particularly in the care of the teeth and the prevention of decay." The specific aims of some programs should be to care for as many indigent children as possible in the filling, extraction, and cleaning of teeth. The need is indicated for establishing dental public health on a firm basis in every state or city health department. Such a division of public health dentistry should be under the supervision of a professionally educated and trained dental health director. Before a new program is instituted a community health survey is needed. This practical outline should prove useful to both teachers and students of public health dentistry.

IRA V. HISCOCK

Fetal and Neonatal Death—*By Edith L. Potter, M.D., and Fred L. Adair, M.D. Chicago: University of Chicago Press,* 1940. 207 pp. Price, $1.50.

It is seldom that one finds so much scientific data of current interest packed into so small a compass as in this convenient little volume. The authors have made a "Survey of the Incidence, Etiology, and Anatomic Manifestations of the Conditions Producing Death of the Fetus in Utero and the Infant in the Early Days of Life." The opening chapter brings together a considerable amount of material arranged in convenient form for reference. Before entering upon a discussion of the abnormal the authors describe concisely the normal fetus and infant, bringing together the results of modern research.

A chapter is devoted to the technic of fetal and neonatal post-mortem examinations before taking up the causes of death. The importance of a systematic examination of every dead fetus is stressed. The chapter on special pathology should prove of especial interest to the obstetrician. In this study as in former ones along the same line a considerable number of fetal deaths cannot be accounted for by the pathological findings. This is not a book for popular consumption, but for thoughtful students of a period in life where the mortality is highest.

RICHARD A. BOLT

1. **Introduction to Housing: Facts and Principles**—*By Edith Elmer Wood, U. S. Housing Authority. Washington: Superintendent of Documents,* 1940. 140 pp., plus Appendices, ill. Price, $.30.

2. **Can America Build Houses?**—*By Miles L. Colean. Pamphlet No. 19 (revised). New York: Public Affairs Committee, 30 Rockefeller Plaza,* 1940. 31 pp., charts. Price, $.10.

3. **The Homes the Public Builds**—*By Edith Elmer Wood and Elizabeth Ogg. Pamphlet No. 41. New York: Public Affairs Committee, 30 Rockefeller Plaza,* 1940. 32 pp., charts. Price, $.10.

4. **New Homes for Old: Public Housing in Europe and America**—*By William V. Reed and Elizabeth Ogg. Headline Book No. 22. New York: Foreign Policy Association, 8 West 40th St.,* 1940. 112 pp., ill.; charts, plans. Price, $.25.

5. **Homes: Front Line of Defense for American Life.** Special Housing Edition, *Survey Graphic. New York: Survey Associates, 112 E. 19th St., February,* 1940. Ill., Bibliog. Price, $.40.

6. **Housing the Masses**—*By Carol Aronovici. New York: Wiley,* 1939. 291 pp.; ill., tables. Price, $3.50.

7. **Housing for the Machine Age**

—*By Clarence Arthur Perry. New York: Russell Sage Foundation,* 1939. 261 pp. Price, $2.50.

1. This is probably the most valuable single reference work in the housing literature of the past five years. The wealth of data from recent surveys of housing and allied fields which are skillfully presented in charts, graphs, and tables, are extremely useful in themselves, but when they serve as the spring-board for Mrs. Wood's salty and penetrating discussion of housing theory, they take on unique vitality. Always a champion of decent housing as a cornerstone of public health, the author has here treated both the negative and the positive aspects of housing as a health factor.

A thread tying the work together is the statement and demolition of popular fallacies with respect to housing. With clarity and wit, some fifteen such fallacies ("Slums are made by the people who live in them"; "If our great-grandparents went without bathtubs, it is no hardship for working people to do so today"; etc.) are simply set forth and deftly disposed of. The beliefs thus exploded are not only those of housing obstructionists, but also those of housing zealots and emotionalists.

Giving short shrift to those who contend that good housing alone would wipe out disease and juvenile delinquency, the author firmly establishes the rôle of adequate shelter and decent neighborhoods as a basic element, though not the only one, in physical and mental health of human beings, and in the fiscal stability of towns and cities.

If there can be any such thing as a one-volume library on housing, Mrs. Wood has given it to us in these 140 pages.

2. Mr. Colean's pamphlet for the Public Affairs Committee sets forth the programs of the various federal housing agencies against a background of the governmental policies and economic conditions which brought these agencies into being. It stresses also the need for local initiative in a housing program to meet our serious national housing shortage. First issued in 1938, this pamphlet has been revised to cover recent legislative changes in the public housing program.

3. The Wood-Ogg booklet in the Public Affairs series is done with the same skill which characterizes the *Introduction to Housing* reviewed above, though its organization is quite different; a hypothetical housing official addresses an audience of tenants in a public housing project, and in a most readable discussion he answers questions put to him on the scope and purposes of public housing agencies. Briefly but clearly treated are such topics as the housing prospects of families with incomes too high to qualify for federally-subsidized projects, the influence of public housing on private real estate developments, and the value of the often maligned Greenbelt towns developed by Resettlement Administration.

4. In *New Homes for Old* it is recognized that housing progress in Europe is now blacked out; but the experience gained in foreign housing programs is succinctly set forth for the lessons it may teach America. While competent criticism is made of shortcomings in foreign programs, positive emphasis is put on several aspects of long-range foreign housing policy which have hardly emerged as yet in American practice or thinking—such as the recognition of overcrowding as a condition warranting special measures for abatement, the rôle of coöperative housing enterprises, and the need for municipal purchase of housing sites in advance of their development. This work is abundantly illustrated with photographs

and plans of foreign housing developments, and its text is an excellent introduction to both the failures and accomplishments of large-scale housing everywhere.

5. This edition of *Survey Graphic* is the third in a notable series of special issues on housing and planning, the others being dated May, 1925, and October, 1932. The rôles of housing technology, government, political action, taxes, the law, and social planning are covered by leading authorities. The two page bibliography is particularly good, covering many special phases of housing and related planning problems.

6. *Housing the Masses* is written from a broad perspective of 25 years' familiarity with American housing and planning. It is devoted to the problem of rehousing all groups in the population who need it, and not only those who live in slums. In fact, the author intentionally omits discussion of slum problems as such, on the ground that these are abundantly treated elsewhere in the literature. He contends that legislation—even of the admirable types which have created the USHA and FHA—cannot meet the housing needs in the absence of basic changes in the business methods and technical procedures of the building industry, including its real estate branches. Broad-gauge chapters are devoted to the problems of land development, the rôle of financial machinery, the housing market as determined by earning capacity and population trends, and the need for popular and technical education in the field of housing and broad planning. A comprehensive solution, Aronovici contends, means "not only the revamping of the economy and technic of planning and building, but also a readjustment of housing to the functions of the community, and the reorganization of the pattern of the neighborhood and the community to the needs of housing. Without community planning, city, county, state, and regional, designed to implement modern ways of living and to be adjustable to desirable changes, the housing problem cannot be permanently solved."

7. In *Housing for the Machine Age*, Perry has dealt less broadly with the field than might be inferred from his title. The work is primarily concerned with technics for accomplishing large-scale residence construction under the "neighborhood unit formula" developed some years ago by the author. Although he deals at length with details of land assembly and site planning which are of interest primarily to housing technicians, much valuable discussion is given to those elements in neighborhood organization which must underlie any sound development of large-scale housing.

ALLAN A. TWITCHELL

Principles of Healthful Living—*By Edgar F. Van Buskirk, Ph.D., edited by Wilson G. Smillie, M.D. New York: The Cordon Co.*, 1938. 386 pp. Price, $2.25.

A wealth of material dealing with problems in the realm of personal hygiene and practical human physiology is presented in an interesting manner in this volume designed for both the college student and the intelligent citizen. Attention is drawn to the responsibility of the individual to the health of the group. "The health of the individual and the health of the group are inextricably interrelated; to attempt to separate them would be not only artificial but undesirable."

The twelve chapters are grouped into two main sections, the first dealing with a discussion of the fundamental concepts relating to the general nature of the world and state of scientific advancement in which we live, while the

second and larger group considers the problems in the field of physiology and care of the human body.

In the introduction the author points out that knowledge concerning the basic principles of healthful living is not sufficient—but that in addition the adolescent must be inspired and trained to see the value of doing his part to maintain and improve his own health and the health of others. This present work has the threefold purpose of revealing the extent of the problem, exploring the realm of human physiology, and selecting for discussion that material which has at the same time practical and cultural value. Two attitudes which students have found helpful in getting their bearings in life are stated to be friendliness and receptivity to new ideas, and foresightedness. The effects of the advancement of science upon the social problems are explained, and the conclusion is drawn that whereas science gives us the means of refashioning our environment it must be supplemented with education and the acceptance of socially desirable aims if the ideals of human progress are to be realized. As yet society is far from making the best use of the findings of scientific investigation, the author admits.

The physical factors of the environmental background of personal hygiene, such as climate, light, water, and soil are well described. The rise of preventive medicine is given a prominent place in the analysis of the backgrounds of hygiene. The development of the modern conceptions of disease types and the rôle of medicine are treated, the problems of immunity, sterility, control of disease, and natural and artificial bodily defense mechanisms being given careful consideration. Consideration is given to practical problems of human physiology and care and to mental health.

The book is well printed and effectively illustrated with photographs and charts, and contains a useful bibliography. IRA V. HISCOCK

Congenital Malformations. A Study of Parental Characteristics, with special reference to the reproductive process—*By Douglas P. Murphy, M.D., F.A.C.P. Philadelphia: University of Pennsylvania Press,* 1940. 166 pp. Price, $2.00.

This informative study presents the results of an investigation of 890 defective individuals in 884 families obtained from the death certificates in Philadelphia covering the period from January 1, 1929, to December 31, 1933. An attempt is made to determine the frequency of congenital malformations among brothers and sisters in these families and to correlate these data with hereditary and environmental factors.

Death certificates indicating malformations or defects associated with deaths of live-born and still-born babies were used as source material to select the families which were later contacted by trained personnel to secure the data recorded on the questionnaire, a copy of which is included in this study. Information was obtained from home visiting, hospital records, and from physicians familiar with the cases. The data are set up in convenient tables and graphs.

The distribution of the observed malformed individuals by birth rank, together with their theoretical distribution as computed by the Greenwood-Yule reconstruction method, is set forth in a number of tables. The standard deviation of the difference between mean ranks of the observed normal and observed malformed individuals was calculated by the Penrose formula. The conclusions are drawn largely from percentage distributions of the various factors under consideration. The conclusions would have been more convincing if correlation coefficients with

their probable errors had been presented. In the final summary 32 conclusions are drawn, the last of which states that—

> The observations which have been made during the course of the present investigation lead to the general conclusion that gross, human, congenital malformations arise solely from influences which affect the germ cells prior to fertilization. No evidence is available to indicate that they result from factors which operate for the first time after fertilization has taken place. . . . Perhaps the single most convincing piece of evidence in favor of heredity is the frequent duplication of defects in brothers and sisters. This was observed in the case of the more usual, and the more serious malformations, as well as in the more common types of less serious ones.

A helpful list of references to similar studies is given at the end of this volume. RICHARD A. BOLT

The First General Epidemiological and Morbidity Survey of China —*By H. Sutherland Gear, M.D., B.Sc., (Rand); D.P.H. (Lond.) D.T.M. & H. (Eng.). Chinese Medical Association, Special Report Series No. 11.* 183 pp. Price: In China, N. C. $2.00. Abroad, U. S. $1.00 or 4 shillings. (Date and place of publication not stated.)

This report deals with a study made by Dr. Gear who was then Associate in Preventive Medicine and Medical Statistics in the Henry Lester Institute of Medical Research of Shanghai. It was made possible through the coöperation of the Council on Research of the Chinese Medical Association and 27 hospitals which were selected because of their geographical distribution, importance and representative character.

These hospitals were supplied with forms and requested to record, for each new outpatient and inpatient during 1933 and 1934, the date of admission, their present and past domicile, age, occupation, and malady. A modified classification of causes of illness, suitable to the areas, was supplied with instructions in order to make the records uniform. The work thus represents a survey of the conditions which brought Chinese to practitioners of western-type medicine in representative hospitals of China. The disease conditions enumerated are the diagnoses made of the processes responsible for the chief complaints of the patients. The study covers 208,045 patients admitted to 17 hospitals in 1933 and 268,684 patients admitted to 25 hospitals in 1934. Incomplete returns were made from the remaining hospitals surveyed. The report does not differentiate inpatients and outpatients in the statistical tables, nor does it deal with mortality or case fatality.

Students of the mass phenomena of disease in western countries are apt to take for granted official morbidity and mortality publications. Dr. Gear's study represents pioneer work in this field in China. Little reflection, and little knowledge of conditions in China are needed to appreciate the difficulties of his task. For example, the translation of the Chinese age to its western equivalent represents for each patient a statistical chore.

Detailed tables are given distributing patients, according to malady for each of the 2 years, by age, sex, month of admission, and geographical area. Each numerically important disease is compared in these attributes to the total hospital population. The author also compares these figures to hospital statistics published for other localities and points out their similarities and differences. Because of the difficulty in evaluating the selective factors which bring people to hospital inpatient and outpatient care in different localities, he attempts only the broadest generalizations in these comparisons. He also quotes available references which deal with the prevalence or occurrence of different diseases in China.

In both 1933 and 1934 the 8 numeri-

cally important conditions responsible for admission were the same with slight annual differences in their relative importance. Approximately 60 per cent of all admissions in 1934 were for the following causes: Diseases of the Skin and Cellular Tissue (20.1 per cent); Conditions of Violence (9.4 per cent); Diseases of the Digestive System (8.5 per cent); Venereal Diseases (5.9 per cent); Diseases of the Eye (5.2 per cent); Tuberculosis (4.8 per cent); Trachoma (3.9 per cent); and Diseases of the Genito-Urinary System (3.4 per cent). In these, and in other conditions reported, there were differences in proportions in hospitals in different geographic locations but too much importance cannot be attached to this because of the relatively short period of time involved and the difficulties in assessing factors selective for hospital admission. The age and sex selection of a number of the diseases reported differed somewhat from that seen in western countries, but so did the age distribution of the hospital populations.

The author makes sensible conclusions from his material regarding medical needs in the hospitals in China. It is encouraging that his work is being carried on by the Chinese Government and to be hoped that the present war there has not destroyed all of these efforts.

A. G. GILLIAM

World Federation of Education Associations Health Section Report —*Eighth Biennial Conference, August, 1939. New York: World Federation of Education Associations,* 1940. 88 pp. Price, $.60.

The Health Section Report of the World Federation of Education Associations released by the office of the Health Education Secretariat sums its purpose in this paragraph written by the secretary, Sally Lucas Jean:

> While chaos reigns and horrors multiply, children are born, grow and enter school. These boys and girls are either to be strong, healthy adults to carry on the world's work happily, or weaklings who have not had a chance to know, and apply, healthy living customs.

The report is based upon correspondence with regional correspondents representing 40 countries. It shows that in every section of the world reached by the Federation some effort is being made to give the children a chance to learn to avoid disease and to build health. Life situations in most instances are built into the program of health education.

We find correspondents from the countries in which malaria is prevalent reporting the efforts of school children to learn to combat this disease with the means within their power. The effort in other countries is to make hookworm a disease of the past. X-ray examinations of the chest are reported from countries in which tuberculosis is a serious problem. The responsibility assumed by children in relation to their environment was reported as notable in many instances.

The good will cruise of the section which touched the coast of Brazil and Puerto Rico last year showed growing interest in all parts of the world in health education and a desire for aid from those who have experience to give, according to report.

MARY P. CONNOLLY

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

For Raw Pork Eaters—It seems that it is possible to diagnose acute trichinosis. Malaise, abdominal discomfort, fever, headache and edema about the eyes, plus an eosinophilia and a positive reaction to trichinella antigen are suggested as the signs.

ANDES, J. F., *et al.* Early Mild Infestation with the Parasite Trichinella Spiralis. J.A.M.A. 114, 23:2271 (June 8), 1940.

Current Disease Statistics—In 1939 the reported incidence of influenza was double that of the preceding year and poliomyelitis was more than four times as prevalent. Smallpox was still high but less than in 1938, and diphtheria, measles, meningitis, scarlet fever, and typhoid fever were definitely down. Death rates were lower, too.

ANON. Trend of Morbidity and Mortality During 1939 and Recent Preceding Years. Pub. Health Rep. 55, 19:801 (May 10), 1940.

Toxic Limits of Gases—Pending the completion of the code on toxic limits under preparation by the American Standards Association a table of safe concentrations for hazardous gases or vapors is offered.

BOWDITCH, M., *et al.* Code for Safe Concentration of Certain Common Toxic Substances Used in Industry. J. Indust. Hyg. & Toxicol. 22, 6:251 (June), 1940.

Good Food for Both Child and Teeth—Children with active caries must be considered to have a metabolic disturbance which can be corrected by an optimum intake of the protective foods. This conserves the teeth but also the health of their possessor.

BOYD, J. D. The Rôle of Diet in the Control of Dentinal Caries. J. Am. Dietet. A. 27, 5:750 (May), 1940.

Tuberculosis After-Care — Two papers on the rehabilitation of the tuberculous patient discuss the subject from the Canadian standpoint which differs little from the problem south of the border. Because we have done so little here, and rehabilitation becomes increasingly important as a tuberculosis control measure, these papers contain much of interest.

COLLINS, R. J. After-Care and Rehabilitation of the Tuberculous, (and) HATFIELD, W. H. Rehabilitation. Canad. Pub. Health J. 31, 5:209 (May), 1940.

Duration of Illness Statistics—Tuberculosis, nervous diseases, cerebral hemorrhage, and cancer kept people longest in bed. But many other causes of protracted bed care were unearthed in this nation-wide survey.

COLLINS, S. D. Duration of Illness from Specific Diseases among 9,000 Families, Based on Nation-wide Periodic Canvasses, 1928–1931. Pub. Health Rep. 55, 20:861 (May 17), 1940.

Nursing and Preventive Medicine—Stressing the social aspects of the modern public health program, this paper reviews the history of the development of public hygiene particularly as it impinges on public health nursing.

GALDSTON, I. Effects of Medical Advances on Nursing. Pub. Health Nurs. 32, 6:352 (June), 1940.

British Health Policy—Reasons why the British Medical Association urges the extension of the national health insurance system so that everyone may have the services of a family doctor of his choice.

HILL, C. Whither National Health Insur-

ance? J. Roy. San. Inst. 60, 12:409 (June), 1940.

Where There's a Will—Outlined here are the case finding methods by which pulmonary tuberculosis may be eradicated from the working world.

LONG, C. F. Tuberculosis Case-Finding in Industry. Pub. Health Nurs. 32, 7:441 (July), 1940.

Relative Hospital Facilities—The number of hospital beds and the extent to which they are used depend upon the level of per capita income. Wealthy states have more than twice the institutions that the poorest states can provide, but it is the poor who still have the greatest need of hospital care.

PENELL, E. H., *et al.* Existence and Use of Hospital Facilities among the Several States in Relation to Wealth as Expressed by Per Capita Income. Pub. Health Rep. 55, 19:822 (May 10), 1940.

Superimposed Active and Passive Immunity—In France, nonimmune children exposed to epidemic diphtheria were protected with a dose of toxoid followed in a few minutes with an injection of antidiphtheritic serum; then at fortnightly intervals two more injections of toxoid were given. The same combination of the appropriate antitoxin and anatoxin was used to protect against tetanus.

RAMON, G. Combined (Active-Passive) Prophylaxis and Treatment of Diphtheria or Tetanus. J.A.M.A. 114, 24:2366 (June 15), 1940.

Sound Views about School Health—An emphatic answer to the question as to who shall be responsible for the school health program is given by the U. S. Commissioner of Education. All school health services are, or should be, primarily educative, hence they belong under the jurisdiction of the schools. Medical and dental treatment should not be provided by the schools, for such services are not educative. A local health council is proposed as a measure to insure the adequacy of the non-educative health factors.

STUDEBAKER, J. W. The Administration of Health Education. J. Health & Phys. Ed. 11, 6:339 (June), 1940.

Health Statesmanship—Lack of medical care, defective nutrition, insanitary housing, social insecurity—these are the major health problems today. As we slide down the economic scale, disease and death mount. On the hundredth anniversary of the classic Chadwick report, we need a new one, says this author eloquently.

WINSLOW, C.-E. A. Housing and Health. Pub. Health Nurs. 32, 7:434 (July), 1940.

More about Trichinosis—Hogs fed on uncooked garbage are the chief source of trichinosis. Little can be done to remedy this hazard as long as cities permit the practice to continue. Health officials should take up the cudgels against the hog feeders.

WRIGHT, W. H. Studies on Trichinosis. Pub. Health Rep. 55, 24:1069 (June 14), 1940.

Maternal Death Circumstances—This introduction to a series of puerperal fatality studies reveals that the first hour and the first day are the most dangerous although the average interval between birth of child and death of mother is 9 days. When the baby dies the puerperal fatality rate is 15 times the rate for live births. Many other significant findings are recorded here.

YERUSHALMY, J., *et al.* Studies in Childbirth Mortality. Pub. Health Rep. 55, 23: 1010 (June 7), 1940.

BOOKS RECEIVED

GROWTH AND DEVELOPMENT OF THE YOUNG CHILD. By Winifred Rand, Mary E. Sweeny and E. Lee Vincent. 3d ed. rev. Philadelphia: Saunders, 1940. 462 pp. Price, $2.75.

DIGEST OF LAWS AND REGULATIONS RELATING TO THE PREVENTION AND CONTROL OF SYPHILIS AND GONORRHEA IN THE FORTY-EIGHT STATES AND THE DISTRICT OF COLUMBIA. Compiled under the direction of Bascom Johnson. New York: American Social Hygiene Association, 1940. 438 pp. Price, $5.00.

TEXT-BOOK OF PUBLIC HEALTH. By W. M. Frazer and C. O. Stallybrass. (Formerly Hope and Stallybrass.) 10th ed. Baltimore: Williams and Wilkins, 1940. 504 pp.

BEYOND THE CLINICAL FRONTIERS. By Edward A. Strecker. New York: Norton, 1940. 210 pp. Price, $2.00.

GRADUATE MEDICAL EDUCATION. Report of the Commission on Graduate Medical Education. Chicago: University of Chicago Press, 1940. 304 pp.

A COLLEGE TEXTBOOK OF HYGIENE. By Dean Franklin Smiley and Adrian Gordon Gould. 3d ed. New York: Macmillan, 1940. 539 pp. Price, $2.50.

LIVING. Thurman B. Rice. Chicago: Scott, Foresman, 1940. 464 pp. Price, $2.25.

THE FUNDAMENTALS OF PERSONAL HYGIENE. By Walter W. Krueger. 3d ed. Philadelphia: Saunders, 1940. 304 pp. Price, $1.75.

PUBLIC HEALTH NURSING IN OBSTETRICS. Part I. New York: Maternity Center Association, 1940. 83 pp. Price, $.50.

INSECT PESTS. Wm. Clunie Harvey and Harry Hill. London: Lewis, 1940. 292 pp. Price $2.75.

THE PUBLIC HEALTH NURSE AND HER PATIENT. By Ruth Gilbert. New York: Commonwealth Fund, 1940. 396 pp. Price, $2.25.

DIETETICS. By Alida Frances Pattie. 22nd ed. Mount Vernon: Published by Author, 1940. 868 pp. Price, $3.00.

THE LAW OF PUBLIC HOUSING. By William Ebenstein. Madison: University of Wisconsin Press, 1940. 150 pp. Price, $1.75.

ADMINISTRATIVE COST ANALYSIS FOR NURSING SERVICE AND NURSING EDUCATION. By Blanche Pfefferkorn and Charles A. Rovetta. New York: National League of Nursing Education, 1940. 202 pp. Price, $2.00.

SIMPLIFIED DIABETIC MANUAL. By Abraham Rudy. New York: Barrows, 1940. 216 pp. Price, $2.00.

AMERICAN DOCTORS OF DESTINY. By Frank J. Jirka. Chicago: Normandie House, 1940. 361 pp. Price, Trade edition, $3.75. Limited edition, $7.50.

FOR DAUGHTERS AND MOTHERS. By Valeria Hopkins Parker. Indianapolis: Bobbs-Merrill, 1940. 138 pp. Price, $1.50.

PANUM ON MEASLES. (Observations Made During the Epidemic of Measles on the Faroe Islands in the Year 1846 by Peter Ludwig Panum.) A Translation from the Danish. New York: Delta Omega Society, distributed by the American Public Health Association, 1940. 111 pp. Price, $2.50.

AS THE TWIG IS BENT. By Leslie B. Hohman, 1940. New York: Macmillan. 291 pp. Price, $2.50.

THE ERA KEY TO THE USP XI AND NF VI. Revised and Edited by Lyman D. Fonda. 5th ed. Newark: Haynes and George Co., 1940. 320 pp. Price, $1.00.

NATIONAL BATTERY MANUFACTURERS ASSOCIATION. Report of Industrial Hygiene Sessions of the 15th Annual Convention, Oct. 24–25, 1939. Akron, O.: National Battery Manufacturers Association, 1940. 93 pp. Price, $2.00.

TWENTY YEARS OF MEDICAL SERVICE TO PALESTINE, 1918–1938. Report Issued by the Hadassah Medical Organization to Commemorate the Opening of the Hadassah-University Medical Center, Jerusalem. Jerusalem: Achvah Co-op. Printing Co., 1939. 151 pp.

TEETH, HEALTH AND APPEARANCE. Developed by Lon W. Morrey. Chicago: Bureau of Public Relations, American Dental Association, 1940. 48 pp.

PRELIMINARY PROGRAM OF THE SCIENTIFIC SESSIONS OF THE 69th ANNUAL MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION, THE 21st ANNUAL MEETING OF THE MICHIGAN PUBLIC HEALTH ASSOCIATION, MEETINGS OF RELATED ORGANIZATIONS, AND OF THE SEVENTH INSTITUTE ON PUBLIC HEALTH EDUCATION

October 6–11, 1940

THE Annual Meeting Program Committee offers a preview of the content of scientific sessions planned in connection with the 69th Annual Meeting in Detroit, Mich. Inaccuracies and omissions are to be expected and, it is hoped, they will be excused. The professional affiliations and addresses of speakers are not given, but a complete index to participants will be published in the final program which will be distributed to all delegates at the Registration Desk, Ball Room Floor, Hotel Book-Cadillac. Registration headquarters will be opened at 9:30 A.M. on Sunday, October 6.

THE SEVENTH INSTITUTE ON PUBLIC HEALTH EDUCATION

(Under the Auspices of the Public Health Education Section of the American Public Health Association.)

SUNDAY AND MONDAY, AND TUESDAY A.M.

Sunday

10:00 A.M. General Session—Crystal Ball Room, Hotel Book-Cadillac.

Outline of Institute Program. Ira V. Hiscock, Sc.D., Director

The Philosophy of Public Health Education. W. W. Bauer, M.D.

The Status of Public Health Education. C. V. Akin, M.D.

11:15 A.M. Group Discussions with Leaders.

Round Tables: Our 1940 Philosophy as Applied to:

Maternal and Child Health. Jessie M. Bierman, M.D.

Schools and Institutions of Higher Learning. W. Carson Ryan.

Control of Disease. Milton Rose, M.D.

Environmental Factors. Bleecker Marquette.

Adult Health. H. L. Lombard, M.D.

INSTITUTE OF PUBLIC HEALTH EDUCATION (Cont.)

2:00 P.M. General Session—Crystal Ball Room, Hotel Book-Cadillac.

Grandma Is Not Always Wrong. BRUNO GEBHARD, M.D.

2:45 P.M. Group Discussions with Leaders.

Round Tables: Technics of the Personal Interview. Leader to be announced.

Technics of Meetings. Leader to be announced.

Printed Matter Clinic. L. B. HERRINGTON, PH.D.

Radio Demonstration, Studio WWJ. HENRY F. VAUGHAN, DR.P.H., and W. J. SCRIPPS.

4:30 P.M. "Get Together"—Relaxation Hour.

Monday

9:30 A.M. General Session—Michigan Room, Hotel Statler.

Organization of Health Education Programs. CLAIR E. TURNER, DR.P.H.

10:15 A.M. Group Discussions with Leaders.

Round Tables:

Exhibit Clinic. MAYHEW DERRYBERRY, PH.D., and DOROTHY B. NYSWANDER, PH.D.

Photography Clinic. ROBERT SCHMUCK.

The Medical Society's Rôle in Lay Health Education. IAGO GALDSTON, M.D.

2:30 P.M. Group Discussions with Leaders.

Round Tables:

Plans of Coördination of Health Education. PHILIP L. RILEY, PH.D.

Public Relations and Health Education. MARY P. CONNOLLY.

Research in Evaluation. MARTHA CRUMPTON HARDY.

New Methods for State Health Departments. BURT R. RICKARDS.

4:30 P.M. Conducted Tour of Exhibits. BRUNO GEBHARD, M.D.

Tuesday

9:30 A.M. General Session—Grand Ball Room, Hotel Statler.

Highlights of the Institute. WILLIAM P. SHEPARD, M.D., H. E. KLEINSCHMIDT, M.D., HUNTINGTON WILLIAMS, M.D., DOROTHY B. NYSWANDER, PH.D., and IRA V. HISCOCK, SC.D.

NOTE: A final program of the Institute may be obtained from the Association office, 50 West 50th Street, New York, N. Y. The registration fee is $3.00 for members of the American Public Health Association, and of the Michigan Public Health Association; and $6.00 for all others. Registration will be closed at the discretion of the Director and early enrollment is accordingly recommended.

OTHER SUNDAY AND MONDAY MEETINGS

AMERICAN SOCIAL HYGIENE ASSOCIATION

Sunday, 8:30 P.M. Crystal Ball Room, Hotel Book-Cadillac.

AMERICAN SCHOOL HEALTH ASSOCIATION

Monday, 8:00 P.M.

First Session—Esquire Room, Hotel Book-Cadillac

Presiding: CHARLES L. OUTLAND, M.D., President

SCHOOL HEALTH PROCEDURES, PRACTICAL AND THEORETICAL

In Tennessee. W. CARTER WILLIAMS, M.D.

In Detroit. JOSEPH G. MOLNER, M.D., and VAUGHN F. BLANCHARD.

Discussion. DON W. GUDAKUNST, M.D.

General Discussion.

Monday, 2:00 P.M.

COMMITTEE ON ADMINISTRATIVE PRACTICE

Grand Ball Room, Hotel Statler

(Health Administrators are invited to attend)

Presiding: E. L. BISHOP, M.D.

Report of the Sub-Committee on State Health Administration. *Chairman,* ROBERT H. RILEY, M.D.

Report of the Sub-Committee on Evaluation of Administrative Practices. *Chairman,* HAVEN EMERSON, M.D.

CONFERENCE OF CLERKS OF FULL-TIME HEALTH DEPARTMENTS

Monday, 9:30 A.M. and 2:30 P.M. Hotel Detroit-Leland.

CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS

Monday, 9:30 A.M. and 2:30 P.M. Parlor C, Hotel Statler.

CONFERENCE OF STATE LABORATORY DIRECTORS

Monday, 9:30 A.M. and 2:30 P.M. Ivory Room, Hotel Statler.

CONFERENCE OF STATE SANITARY ENGINEERS

Monday, 9:30 A.M. and 2:30 P.M. Parlor A, Hotel Statler.

INTERNATIONAL SOCIETY OF MEDICAL HEALTH OFFICERS

Monday, 9:30 A.M. and 2:30 P.M. Bagley Room, Hotel Statler.

Monday, 6:30 P.M. Bagley Room, Hotel Statler. Dinner Session.

MICHIGAN PUBLIC HEALTH ASSOCIATION

Monday, 12:30 P.M. Crystal Ball Room, Hotel Book-Cadillac. Luncheon Session.

NATIONAL ORGANIZATION FOR PUBLIC HEALTH NURSING

Monday, 7:00 P.M. Crystal Ball Room, Hotel Book-Cadillac. Dinner Session.

In Honor of Grace Ross, R.N., President of the N.O.P.H.N., for her twenty-five years of service as Director of the Division of Nursing, Department of Health, Detroit, Mich.

(A cordial invitation is extended to everyone to attend.)

A Citizen Looks at Public Health. MARGARET CULKIN BANNING.

STATE DIRECTORS OF HEALTH EDUCATION

Monday, 10:00 A.M. and 2:30 P.M. Parlor F, Hotel Book-Cadillac.

STATE DIRECTORS OF PUBLIC HEALTH NURSING

Monday, 9:30 A.M. and 2:30 P.M. Washington Room, Hotel Book-Cadillac.

Monday, 2:00 P.M.

SYMPOSIUM ON OCCUPATIONAL DISEASES

(Sponsored by the Industrial Hygiene Section)

English Room, Hotel Book-Cadillac

Presiding: KENNETH E. MARKUSON, M.D.

The Health of Storage Battery Workers. W. C. DREESSEN, M.D.

Control of Exposures in the Electroplating Industry. P. B. RASTELLO, M.D.

Putting the Tools of Industrial Hygiene in the Administration of an Occupational Disease Law. S. C. ROTHMANN.

Subject and Speaker to be announced.

SESSIONS FROM TUESDAY, OCTOBER 8 TO FRIDAY, OCTOBER 11

TUESDAY, 9:30 A.M.

LABORATORY

First Session—Banquet Room, Hotel Statler

Section Business.

Report of the Coördinating Committee on Standard Methods. *Chairman,* LIEUTENANT COLONEL A. PARKER HITCHENS, M.D.

Report of the Standard Methods Committee on Diagnostic Procedures and Reagents. *Chairman,* WILLIAM D. STOVALL, M.D.

Report of the Standard Methods Committee on Biology of the Laboratory Animal. *Chairman,* LIEUTENANT COLONEL RAYMOND A. KELSER, PH.D.

Report of the Laboratory Section Representative on the Commission for the Study of Biological Stains. WILLIAM D. STOVALL, M.D.

Sanitary Air Analysis. WILLIAM F. WELLS.

Comparative Efficiency of Media for the Isolation of Shigella Dysenteriae. CATHERINE R. MAYFIELD and MAUD GOBER.

The Value of Bacteriophage Determination as a Supplemental Procedure in the Diagnosis of Bacillary Dysentery. KENNETH M. WHEELER, PH.D., and A. L. BURGDORF, M.D.

Value of Gonorrhea Cultures in the Clinical Management of Gonorrhea. GEORGE SEWELL, M.D., EMILY A. CLARK, M.D., and EMMETT A. NELSON.

The Treatment of Experimental Syphilis with Fever and Neoarsphenamine. RUTH A. BOAK, M.D., CHARLES M. CARPENTER, M.D., and STAFFORD L. WARREN, M.D.

Detection of False Positives in Sero-Diagnosis of Syphilis. REUBEN L. KAHN, D.SC., E. B. MCDERMOTT, and S. MARCUS.

ENGINEERING SECTION, CONFERENCE OF STATE SANITARY ENGINEERS, AND CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS

Joint Session—English Room, Hotel Book-Cadillac

Presiding: EARNEST BOYCE, C.E., JOEL I. CONNOLLY, and H. A. KROEZE.

Report of the Committee on Water Supply. *Chairman,* ANSELMO F. DAPPERT.

Report of the Committee on Waterways Pollution. *Chairman,* CARL E. GREEN.

Report of the Committee on Coördination of Public Health Engineering Activities. *Chairman,* ROY J. MORTON.

Report of the Committee on Municipal Public Health Engineering. *Chairman,* SOL PINCUS, C.E.

Public Health Aspects of the Manteno State Hospital Typhoid Fever Outbreak. C. W. KLASSEN.

TUESDAY, 9:30 A.M.

EPIDEMIOLOGY

First Session—Bagley Room, Hotel Statler

TENTH ANNIVERSARY SESSION

The History and the Progress of the Epidemiology Section. Commemorating the Tenth Anniversary. JOHN A. FERRELL, M.D.

Chronic Illnesses Among Syphilitic and Tuberculous Families and the Expense to the Community of Such Families. GEORGE H. RAMSEY, M.D., MARJORIE T. BELLOWS, and HILDA FREEMAN SILVERMAN.

Epidemiology of Cancer. JAMES A. CRABTREE, M.D.

Rheumatic Fever—Factors in Its Occurrence. JOHN R. PAUL, M.D.

The Application of Epidemiological Methods to the Study of Distribution of Medical Care. JOHN J. BOURKE, M.D.

INDUSTRIAL HYGIENE

First Session—English Room, Hotel Statler

Address of the Chairman. **The Renaissance of Industrial Hygiene.** CLARENCE D. SELBY, M.D.

A Preliminary Survey of the Industrial Hygiene Problem in the United States. JOHN J. BLOOMFIELD.

Discussion. HERBERT G. DYKTOR.

Chronic Incapacitation Among Industrial Workers. WILLIAM M. GAFAFER, D.Sc.

Discussion. RICHARD D. MUDD, M.D.

PUBLIC HEALTH NURSING

First Session—Michigan Room, Hotel Statler

Report of the Committee to Study Relationships Between Official and Nonofficial Public Health Nursing Agencies. *Chairman,* JULIA L. GROSCOP, R.N.

Report of the Sub-Committee on Public Health Nursing of the Committee on Administrative Practice. *Chairman,* MARION W. SHEAHAN, R.N.

Brief Reports of Activities of A.P.H.A. Committees on Which the Public Health Nursing Section Has Representation:

Eligibility. AGNES J. MARTIN, R.N.

Nominating. RUTH HOULTON, R.N.

Research and Standards. MARGARET G. ARNSTEIN, R.N.

Administrative Practice. MARION W. SHEAHAN, R.N.

Professional Education. PEARL MCIVER, R.N.

Discussion: Section Activities of the Future.

TUESDAY, 9:30 A.M.

FOOD AND NUTRITION

First Session—Ivory Room, Hotel Statler

NUTRITION RESEARCH

Some Important Factors in the Etiology of Anemias. CYRUS C. STURGIS, M.D.

Clinical Manifestations of Ariboflavinosis. V. P. SYDENSTRICKER, M.D.

The Importance of Dietary Fat. CARL A. HOPPERT, PH.D.

The Chemistry of Growth of Children. ICIE MACY HOOBLER, PH.D.

Rickets in Rural Health. FRED O. TONNEY, M.D.

Report of the Committee on Assay of Foods. *Chairman,* HENRY T. SCOTT, PH.D.

HEALTH OFFICERS

First Session—Crystal Ball Room, Hotel Book-Cadillac

Principles of Administration Applicable to Health Departments. LENT D. UPSON, PH.D.

General Principles of Record Keeping in Health Departments. JOSEPH O. DEAN, M.D., and MARION C. HENDERSON.

Evaluation of Municipal Sanitation Inspection Services. CHARLES V. CRASTER, M.D.

Maternal and Child Health Program Under Title V, Social Security Grants-in-Aid to States. EDWIN F. DAILY, M.D.

Public Health Program Under Title VI, Social Security Grants-in-Aid to States. E. R. COFFEY, M.D.

AMERICAN ASSOCIATION OF STATE REGISTRATION EXECUTIVES

First Session—Hotel Detroit-Leland

TUESDAY, 2:30 P.M.

VITAL STATISTICS

First Session—Founders Room, Hotel Book-Cadillac

Organizing Local Registrars. CAPTAIN STUART T. FRIANT.

WPA Projects in Vital Statistics. JESSAMINE S. WHITNEY.

Centralized Collection of Marriage and Divorce Records and Their Uses. BERNARD M. COHEN, PH.D.

Title to be announced. STUART A. RICE, PH.D.

TUESDAY, 2:30 P.M.

FOOD AND NUTRITION

Second Session—English Room, Hotel Statler

Presiding: FRANK G. BOUDREAU, M.D., and FREDERICK W. FABIAN, PH.D.

SYMPOSIUM ON MEDICAL APPRAISAL OF NUTRITIVE STATUS

An Assessment of the Nutrition of a Rural Population in Tennessee. JOHN B. YOUMANS, M.D.

Mass Studies on Human Nutrition in Pennsylvania. PAULINE BEERY MACK, PH.D.

RESULTS OF EXAMINATIONS ON THE NUTRITIVE CONDITION OF PUPILS IN A HIGH SCHOOL IN NEW YORK CITY, WITH COMMENTS ON METHODOLOGY

The Adaptometer as an Instrument for Detecting Avitaminosis A. CARROLL E. PALMER, M.D.

Growth and Development. Preliminary Report on the Relation of Roentgen Appraisal to Nutrition. WILLIAM SCHMIDT, M.D.

Survey Methods for Selecting Cases of Anemia. DOROTHY G. WIEHL.

Chemical Methods for Determining the Plasma Level of Vitamin C. H. D. KRUSE, M.D.

MATERNAL AND CHILD HEALTH

First Session—English Room, Hotel Book-Cadillac

PRESENT-DAY MEDICAL SERVICES MADE AVAILABLE FOR MATERNAL AND CHILD HEALTH UNDER PUBLIC HEALTH AUTHORITIES

The Place of Maternal and Child Health Services as Part of a Generalized Program in a Health Unit. WILLIAM J. FRENCH, M.D.

Discussion. ROBERT H. RILEY, M.D.

A County Health Unit with Proper Functioning Maternal and Child Health Program. ISADORE DYER, M.D.

Discussion. G. F. MATTHEWS, M.D.

Medical and Dental Services for Dependent Children under Public Health and Welfare Authorities. LAWRENCE C. COLE.

Discussion. RICHARD A. BOLT, M.D.

The Slossfield Health Center—A Typical Example of Local Medical Services for Mothers and Children under Public Health Auspices. WALTER H. MADDOX, M.D.

Discussion and Summary. EDWIN F. DAILY, M.D.

TUESDAY, 2:30 P.M.

PUBLIC HEARING ON THE SCHOOL HEALTH BUDGET OF ANYTOWN

Special Session—Grand Ball Room, Hotel Statler

(Under the auspices of the American School Health Association, the Oral Health Group, and the Program Committee, American Public Health Association.)

Dramatis Personae:

The Mayor of Anytown.....REGINALD M. ATWATER, M.D.
The City Council.....To be announced.
The Health Officer.....To be announced.
The Superintendent of Schools.....N. P. NEILSON, PH.D.
The School Medical Director.....DON W. GUDAKUNST, M.D.
The Director of Nursing.....BOSSE B. RANDLE
The Director of Dental Hygiene.....To be announced.
The Psychiatric Social Worker.....MAUD E. WATSON, PH.D.
The Executive Secretary of the County Medical Society.....RAYMOND H. GREENMAN
A Representative of the Parent-Teachers' Association.....DOROTHY B. NYSWANDER, PH.D.
A Spokesman for the Parochial Schools.....To be announced.

ENGINEERING AND INDUSTRIAL HYGIENE SECTIONS

Joint Session—Banquet Room, Hotel Statler

Presiding: EARNEST BOYCE, C.E., and CLARENCE D. SELBY, M.D.

General Atmospheric Pollution from Gaseous Contaminants. WILLIAM CROCKER, D.SC.

Discussion. HARRY B. MELLER, D.SC.

Composition of Diesel Exhaust Gas. HELMUTH H. SCHRENK, PH.D., and L. B. BERGER.

Discussion. LEONARD GREENBURG, M.D.

A Study of Dust and Other Environmental Conditions in the Tri-State District of Kansas, Oklahoma and Missouri. CHARLES C. DILLS.

Engineering Services in Industry Other Than Control of Occupational Diseases. JOEL I. CONNOLLY.

TUESDAY, 2:30 P.M.

PUBLIC HEALTH EDUCATION

First Session—Bagley Room, Hotel Statler

HEALTH EDUCATION FOR ADULTS

Carrying Health Education to Adults in Rural Areas Through College Students. ELMA ROOD, R.N., GERTRUDE LINGHAM, P.H.N., and SUZAN ARD.

Discussion.

A New Type of Periodical in Health Education. ISRAEL WEINSTEIN, M.D.

The National Story Magazine as a Channel for Legitimate Health Information. VALERIA H. PARKER, M.D.

The Contribution of College Student Health Service to Adult Education. CHARLES E. SHEPARD, M.D.

Florida Public Health Committee Activities. JOHN P. INGLE, SR.

Discussion.

Section Business.

LABORATORY AND EPIDEMIOLOGY SECTIONS

Joint Session—Crystal Ball Room, Hotel Book-Cadillac

Presiding: JAMES P. LEAKE, M.D.

VIRUS DISEASES

Cotton Rats and White Mice as Experimental Animals in the Study of Poliomyelitis. CHARLES ARMSTRONG, M.D.

Epidemiology of Poliomyelitis in Detroit in 1939. FRANKLIN H. TOP, M.D., and HENRY F. VAUGHAN, DR.P.H.

An Institutional Outbreak of Poliomyelitis. A. C. SILVERMAN, M.D.

Observations on Attempted Recoveries of Poliomyelitis Virus During the 1939 Outbreak in Los Angeles. FRED STIMPERT, PH.D., and JOHN F. KESSEL, PH.D.

Fecal Examinations in Poliomyelitis. JAMES D. TRASK, M.D., and JOHN R. PAUL, M.D.

The Silent Intermediate Reservoir Host as Exemplified in Bovine Pseudorabies and Swine Influenza. RICHARD E. SHOPE, M.D.

TUESDAY, 8:30 P.M.

FIRST GENERAL SESSION

Grand Ball Room, Hotel Statler

Presiding: EDWARD S. GODFREY, JR., M.D., *President,* American Public Health Association.

Addresses of Welcome—Introductions by the Chairman of the Local Committee, ABNER LARNED.

THE HONORABLE EDWARD J. JEFFRIES, JR.

H. ALLEN MOYER, M.D.

Presidential Address. Public Health in National Defense. W. S. LEATHERS, M.D., *President-elect,* American Public Health Association.

The Way of Health. Second Annual Delta Omega Lecture. HENRY F. VAUGHAN, DR.P.H.

Announcement of Sedgwick Memorial Medal Award.

Reception to the President and President-elect.

Dancing.

WEDNESDAY, 8:00 A.M.

JOHNS HOPKINS UNIVERSITY ALUMNI

Breakfast Session—English Room, Hotel Statler

HARVARD UNIVERSITY ALUMNI

Breakfast Session—Washington Room, Hotel Book-Cadillac

WEDNESDAY, 9:30 A.M.

VITAL STATISTICS

Second Session—Founders Room, Hotel Book-Cadillac

Report of the Committee on Accident Statistics. *Chairman,* ROBERT J. VANE.

Report of the Committee on Forms and Methods of Statistical Practice. *Chairman,* A. W. HEDRICH, SC.D.

Report of the Committee on Utilization of Vital Statistics Data During the 1940 Census Period. *Chairman,* W. THURBER FALES, SC.D.

Report of the Committee for the Study of Methods of Estimating Population. *Chairman,* JOSEPH V. DEPORTE, PH.D.

Report of the Committee on Membership. *Chairman,* JESSAMINE S. WHITNEY.

Section Business.

Subject and Speaker to be announced.

What You Can't Do with Mortality Statistics and Why. GEORGE H. VAN BUREN.

Discussion.

WEDNESDAY, 9:30 A.M.

HEALTH OFFICERS AND PUBLIC HEALTH EDUCATION SECTIONS AND AMERICAN SCHOOL HEALTH ASSOCIATION

Joint Session—Crystal Ball Room, Hotel Book-Cadillac

Presiding: ADOLPH WEINZIRL, M.D., CHARLES L. OUTLAND, M.D., and CARL A. WILZBACH, M.D.

ARE WE EMPHASIZING SERVICE IN PUBLIC HEALTH AT THE EXPENSE OF EDUCATION IN HEALTH?

Participants:
WILLIAM P. SHEPARD, M.D., *Panel Chairman*
LEONA BAUMGARTNER, M.D.
W. W. BAUER, M.D.
GEORGE B. DARLING, DR.P.H.
JOSEPH W. MOUNTIN, M.D.
ALBERT B. MCCREARY, M.D.
JOHN T. PHAIR, M.B.
CLAIR E. TURNER, DR.P.H.
DON W. GUDAKUNST, M.D.
DOROTHY B. NYSWANDER, PH.D.

ENGINEERING

First Session—Bagley Room, Hotel Statler

Report of the Joint Committee on Bathing Places of the Engineering Section and the Conference of State Sanitary Engineers. *Chairman,* WARREN J. SCOTT.

A Comparison of Undechlorinated and Dechlorinated 24 and 48 Hour Plate Counts of Swimming Pool Waters. THOMAS M. RIDDICK.

Schistosome Dermatitis as a Bathing Place Problem. JOHN E. MILLER.

Subject and Speaker to be announced.

Section Business.

PUBLIC HEALTH NURSING

Second Session—English Room, Hotel Book-Cadillac

Presiding: MARGARET G. ARNSTEIN, R.N.

INFLUENCING TRENDS IN PUBLIC HEALTH NURSING

An Analysis of the Present Qualifications of Public Health Nurses in the United States. PEARL MCIVER, R.N.

Furnishing Data for Personnel and Other Studies. ALMA C. HAUPT, R.N., and MARIE L. JOHNSON, R.N.

Setting Up New Minimum Qualifications for Public Health Nurses—1940–1945. DOROTHY DEMING, R.N.

Practical Principles of Making and Using Studies. MARIAN G. RANDALL, R.N.

WEDNESDAY, 9:30 A.M.

LABORATORY, FOOD AND NUTRITION, AND EPIDEMIOLOGY SECTIONS

Joint Session—Grand Ball Room, Hotel Statler

Presiding: FREDERICK W. FABIAN, PH.D.

FOOD POISONING

Gastroenteritis Outbreaks from Cream-Filled Pastry. F. E. COUGHLIN, M.D.

Studies of Rebaking Cream-Filled Pastries. F. W. GILCREAS and MARION B. COLEMAN.

Epidemiology of Staphylococci Type of Food Poisoning. R. V. STONE, D.V.M.

The Food Poisoning Micrococci (Staphylococci). W. C. HAYNES and GEORGE J. HUCKER, PH.D.

Typhoid Typing in the Western States. ALFRED S. LAZARUS, PH.D.

The Rôle of Rats in the Spread of Food Poisoning Bacteria of the Salmonella Group. HENRY WELCH, PH.D., M. T. BARTRAM, and MORRIS OSTROLENK.

MATERNAL AND CHILD HEALTH

Second Session—Banquet Room, Hotel Statler

PROGRESS IN PREMATURITY CARE

Essentials in the Care of Premature Infants. JULIUS H. HESS, M.D.

Massachusetts State Program for the Care of Prematures. FLORENCE L. MCKAY, M.D.

A County Program for the Care of Prematures. HENRY R. O'BRIEN, M.D., and MARION I. MURPHY, R.N.

What Constitutes a Suitable Incubator for Premature Infants? ETHEL C. DUNHAM, M.D., H. C. DICKINSON, PH.D., and GRACE J. GOWENS.

Discussion. MAURICE L. BLATT, M.D., HERMAN N. BUNDESEN, M.D., WILLIAM I. FISHBEIN, M.D., ELIZABETH M. GARDINER, M.D., J. M. HAYES, M.D., and ROLAND H. LODER, M.D.

WEDNESDAY, 9:30 A.M.

INDUSTRIAL HYGIENE

Second Session—Michigan Room, Hotel Statler

The Exposure of Workmen to Lead Fume During the Production and Processing of Leaded Steel (Ledloy). A. G. KAMMER, M.D.

Discussion. LOUIS W. SPOLYAR, M.D.

Comparison of Methods for Sampling Lead Fume. LEWIS B. CASE.

Discussion. EDWIN D. MARTIN.

The Response of Animals Attending Exposure to the Vapors of Methyl Bromide. D. D. IRISH, E. M. ADAMS, H. C. SPENCER, and V. K. ROWE.

Discussion. ROBERT A. KEHOE, M.D.

Chronic Manganese Poisoning. PAUL A. NEAL, M.D., ROBERT H. FLINN, M.D., and WILLIAM B. FULTON, M.D.

Discussion.

WEDNESDAY, 12:30 P.M.

INDUSTRIAL HYGIENE

Luncheon Session—Washington Room, Hotel Book-Cadillac

Report of the Committee on Skin Irritants. *Chairman,* LOUIS SCHWARTZ, M.D.

Report of the Committee on Lead Poisoning. *Chairman,* ROBERT A. KEHOE, M.D.

Report of the Committee on Pneumoconiosis. *Chairman,* R. R. SAYERS, M.D.

Report of the Committee on Industrial Anthrax. *Chairman,* HENRY FIELD SMYTH, M.D.

Report of the Committee on Standard Methods for the Examination of Air. *Chairman,* EMERY R. HAYHURST, M.D.

ORAL HEALTH GROUP

Luncheon Session—Ivory Room, Hotel Statler

Where Is Dentistry Going in Public Health? NATHAN SINAI, D.P.H.

ASSOCIATION OF WOMEN IN PUBLIC HEALTH

Luncheon Session—English Room, Hotel Statler

Presiding: SALLY LUCAS JEAN, President.

VOLUNTEER SERVICE IN THE PROMOTION OF HEALTH

Speakers:
FRANK G. BOUDREAU, M.D.
EUNICE FULLER BARNARD.
ELIZABETH M. WAGENET.

WEDNESDAY, 2:30 P.M.

ASSOCIATION OF WOMEN IN PUBLIC HEALTH

Michigan Room, Hotel Statler

Presiding: SALLY LUCAS JEAN, President.

VOLUNTEER SERVICE IN THE PROMOTION OF HEALTH

Speakers:
MRS. GEORGE E. ALTER
MARTHA LESLIE
RUTH O. PIERSON
ROSAMOND LOSH
MRS. ARCH TRAWICK

HEALTH OFFICERS

Second Session—Bagley Room, Hotel Statler

HOW FAR SHOULD HOUSING CONCERN THE HEALTH DEPARTMENT?

(Program Arranged by the Committee on the Hygiene of Housing.)

Chairman of Discussion Panel: C.-E. A. WINSLOW, DR.P.H.

Discussion Panel:
J. M. DALLAVALLE, PH.D.
ALFRED H. FLETCHER
ALLEN W. FREEMAN, M.D.
L. M. GRAVES, M.D.
BLEECKER MARQUETTE
STANLEY H. OSBORN, M.D.
GEORGE C. RUHLAND, M.D.
HENRY F. VAUGHAN, DR.P.H.
H. A. WHITTAKER
HUNTINGTON WILLIAMS, M.D.
ABEL WOLMAN, DR.ENG.
COLEMAN WOODBURY

LABORATORY, ENGINEERING, AND FOOD AND NUTRITION SECTIONS, AND THE MICHIGAN ASSOCIATION OF SANITARIANS

Joint Session—Crystal Ball Room, Hotel Book-Cadillac

Presiding: NELSON HALL, President, Michigan Association of Sanitarians.

RESTAURANT SANITATION

The Enforcement of Dishwashing Regulations Applying to Eating and Drinking Establishments. WALTER VON D. TIEDEMAN, M.C.E.

The Routine Inspection of Restaurant and Beverage Establishments by a Health Department. J. L. POMEROY, M.D., and R. V. STONE, D.V.M.

Cleaning and Sterilizing Drinking and Eating Utensils. W. G. WALTER and GEORGE J. HUCKER, PH.D.

Laboratory Studies of Methods for the Cleansing of Eating, Drinking, and Cooking Utensils. F. W. GILCREAS.

WEDNESDAY, 2:30 P.M.

THE CONTROL OF VENEREAL DISEASES IN A NATIONAL DEFENSE PROGRAM

Special Session—Grand Ball Room, Hotel Statler

Presiding: THOMAS PARRAN, M.D.

Relationship of the Health of Civilians to the Efficiency of the Navy. REAR ADMIRAL ROSS T. MCINTIRE.

The Relationship of the Health of Civilians to the Efficiency of the Army. MAJOR GENERAL JAMES C. MAGEE.

Prostitution as a Source of Infection with the Venereal Diseases in the Armed Forces. Speaker to be announced.

The Control of the Venereal Diseases in Civilian Areas Adjacent to Concentrations of Armed Forces. A. B. PRICE, M.D., and FRANCIS J. WEBER, M.D.

Demonstration in Case Finding Technic. NORMAN R. INGRAHAM, M.D., and HELEN E. WOODS. (*Dramatic Presentation.*)

AMERICAN ASSOCIATION OF STATE REGISTRATION EXECUTIVES

Second Session—Hotel Detroit-Leland

FOOD AND NUTRITION

Third Session—English Room, Hotel Statler

Factors Influencing the Flavor of Milk. PAUL F. SHARP, PH.D.

The Nutritive Value of Milk Fat. EDWARD J. SCHANTZ, PH.D.

Present Status of Researches on Soft Curd Milk. R. L. HILL, PH.D.

Improving the Quality of Milk Supplies in Small Communities. (Report of the Committee on Milk and Dairy Products.) *Chairman,* MERRILL J. MACK. To be presented by C. J. BABCOCK.

PUBLIC HEALTH NURSING SECTION, AMERICAN SCHOOL HEALTH ASSOCIATION, AND ORAL HEALTH GROUP

Joint Session—Banquet Room, Hotel Statler

Presiding: RICHARD C. LEONARD, D.D.S.

MARSHALLING COMMUNITY FORCES FOR DENTAL HEALTH

Speakers:
RHODA P. SHELDON, R.N.
ANNIE J. TAYLOR
JOSEPH I. LINDE, M.D.
FRANK HOUGHTON, D.D.S.

Discussion: FRANK C. CADY, D.D.S., and HAROLD H. MITCHELL, M.D.

WEDNESDAY, 2:30 P.M.

EPIDEMIOLOGY

Second Session—English Room, Hotel Book-Cadillac

TUBERCULOSIS SYMPOSIUM

A Five-Year Follow-up of Discharges from Maryland Tuberculosis Sanatoria. ROSS L. GAULD, M.B., C. H. HALLIDAY, M.D., VICTOR F. CULLEN, M.D., and W. THURBER FALES, Sc.D.

Tuberculosis in Mexican Agricultural Laborers. A. W. NEWITT, M.D., and T. M. KOPPA, M.D.

Use of Miniature X-Ray Films in Tuberculosis Case Finding. BRUCE H. DOUGLAS, M.D., CARL C. BIRKELO, M.D., GAIUS E. HARMON, M.D., and HENRY F. VAUGHAN, DR.P.H.

A Comparison of Secondary Attack Rates in Areas with High and Low Tuberculosis Mortality. W. PALMER DEARING, M.D.

Productive and Non-Productive Examinations in Tuberculosis Case Finding. RALPH HORTON, M.D., N. STANLEY LINCOLN, M.D., JOHN K. DEEGAN, M.D., and MARY E. DALTON.

Tuberculin Sensitivity in School Children and Its Relation to Roentgenological Evidence of Tuberculous Infection. R. S. GASS, M.D.

WEDNESDAY, 6:00 P.M.

PUBLIC HEALTH EDUCATION

STAFF CONFERENCE

Buffet Supper—Esquire Room, Hotel Book-Cadillac

Presiding: CARL A. WILZBACH, M.D.

Acting Health Officer in Charge of Discussion: HUGH R. LEAVELL, M.D.

Staff Conference Representing:

Epidemiology—C. C. DAUER, M.D.
Sanitary Engineering—ALFRED H. FLETCHER
Public Health Nursing—DOROTHY DEMING, R.N.
Public Health Education—SAVEL ZIMAND
Health Education Supervision—LUCY S. MORGAN
Press—JANE STAFFORD, STEPHEN MCDONOUGH, and J. ROSSLYN EARP, DR.P.H.

The members of the group will constitute a staff of experienced men and women, who will draw up a health education plan for a city of 50,000 population, based upon specific needs. This plan will include organization and budget requirements.

Selected members of the audience will constitute a Board of Health and pass upon the recommendations made by the Staff Conference. Other members of the audience will represent the public.

WEDNESDAY, 6:30 P.M.

LABORATORY

Dinner Session—English Room, Hotel Statler

COMMEMORATING FORTY YEARS OF SECTION ACTIVITIES

Report of the Section Archivist. AUGUSTUS B. WADSWORTH, M.D.

ENGINEERING SECTION, CONFERENCE OF STATE SANITARY ENGINEERS, AND CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS

Annual Engineers' Stag Dinner—Crystal Ball Room, Hotel Book-Cadillac

THURSDAY, 8:00 A.M.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Breakfast Session—Ivory Room, Hotel Statler

MICHIGAN SCHOOL HEALTH ASSOCIATION

Breakfast Session—Washington Room, Hotel Book-Cadillac

THURSDAY, 9:15 A.M.

PROFESSIONAL EDUCATION

Second General Session—Grand Ball Room, Hotel Statler

Presiding: WILLIAM P. SHEPARD, M.D., *Chairman,* Committee on Professional Education.

The Work of the Committee on Professional Education. WILLIAM P. SHEPARD, M.D.

The Education and Training of the Physician for a Public Health Career. EDWARD S. GODFREY, JR., M.D.

The Education and Training of Personnel Other Than Physicians. ABEL WOLMAN, DR.ENG.

THURSDAY, 10:30 A.M.

ENGINEERING

Second Session—English Room, Hotel Book-Cadillac

Some Public Health Engineering Aspects of Epidemiological Investigations of Water and Food-Borne Outbreaks. ARTHUR E. GORMAN.

Cross-Connections and Related Plumbing Problems. L. GLEN SHIELDS.

Typhus Control. ROY J. BOSTON.

A Discussion of Population Shifts Consequent Upon a Subsidized Housing Project. L. M. GRAVES, M.D., and ALFRED H. FLETCHER.

THURSDAY, 10:30 A.M.

MATERNAL AND CHILD HEALTH

Third Session—Crystal Ball Room, Hotel Book-Cadillac

SUPERVISION OF MATERNAL AND CHILD HEALTH CONFERENCES WITH DEVELOPMENT OF MEDICAL CONSULTATION SERVICES

Coöperation between County Health Officials and Medical, Dental, and Nursing Services Available in a Community for Maternal and Child Health. E. V. THIEHOFF, M.D.

Discussion. E. J. BRENNER, M.D.

Organization, Supervision, and Objectives of Prenatal Medical Supervision. Are They Being Met by the Average Prenatal Clinic? E. D. PLASS, M.D.

Discussion. H. J. BICKERSTAFF, M.D.

Objectives of Regular Child Health Supervision. Are They Being Met by the Average Child Health Conference? AMOS CHRISTIE, M.D.

Discussion. JESSIE M. BIERMAN, M.D., and HESTER CURTIS, M.D.

City Program of Maternal and Child Health Tied Up with Visiting Nurse Association Services. ELIZABETH G. FOX, R.N.

Discussion. IRA V. HISCOCK, Sc.D.

Clinical Consultation Services and Hospital Care in a Maternal and Child Health Program. MARTHA L. CLIFFORD, M.D.

Discussion. CHARLES H. PECKHAM, M.D.

HEALTH OFFICERS AND EPIDEMIOLOGY SECTIONS

Joint Session—Grand Ball Room, Hotel Statler

Presiding: ADOLPH WEINZIRL, M.D., and JAMES P. LEAKE, M.D.

The Period of Communicability of Syphilis. JOSEPH EARLE MOORE, M.D.

The Recent Extension of Endemic Typhus Fever in the United States. HENRY E. MELENEY, M.D.

Case Finding and Case Holding in the Detroit Syphilis Control Program. LOREN W. SHAFFER, M.D., OSCAR D. SCHWARTZ, M.D., and PAUL T. SALCHOW, M.D.

Geographical Distribution of Serological Types of Hemolytic Streptococci in Scarlet Fever. JOHN E. GORDON, M.D., JOHN H. JANNEY, JR., M.D., and F. F. SCHWENTKER, M.D.

Secondary Attack Rates in Pneumonia: A Study of 14,000 Household Contacts. EDWARD S. ROGERS, M.D., MORTON ROBINS, M.S.P.H., MARGARET G. ARNSTEIN, R.N., and GEORGE H. RAMSEY, M.D.

THURSDAY, 10:30 A.M.

PUBLIC HEALTH EDUCATION

Second Session—Banquet Room, Hotel Statler

NEW TECHNICS IN VISUAL EDUCATION

Increasing the Value of This Medium Through the Utilization of Given Technics. (Demonstration with high school students and accident prevention motion picture.) ALICE V. KELIHER, PH.D.

Discussion.

Public Health Application of High Speed Photography. CLAIR E. TURNER, DR.P.H. (*Stereopticon illustration.*)

Discussion.

Report of the Joint Committee on Community Organization for Health Education. *Chairman,* CLAIR E. TURNER, DR.P.H.

Report of the Committee to Study the Work of the Section. *Chairman,* DAVID B. TREAT.

Report of the Committee for the Study of State Administration of Health Education. *Chairman,* BURT R. RICKARDS.

Report of the Committee on School Health Policies. *Chairman,* EDNA A. GERKEN, C.P.H.

Report of the Joint Committee on Coördination of Activities. *Chairman,* CARL A. WILZBACH, M.D.

INDUSTRIAL HYGIENE AND PUBLIC HEALTH NURSING SECTIONS

Joint Session—Bagley Room, Hotel Statler

Presiding: MARION W. SHEAHAN, R.N., and CLARENCE D. SELBY, M.D.

Difficulties in Keeping the Industrial Nurse in Small Plants in Touch with Public Health Nursing. VICTORIA C. STRALKO, R.N.

The Use of Existing Visiting Nurse Associations in Industrial Service for Small Plants. RUTH HUBBARD, R.N.

Opportunities of a Nurse in the Control of Occupational Health Hazards in the Small Plant. T. LYLE HAZLETT, M.D.

Discussion. DONALD M. SHAFER, M.D.

Health Maintenance in a Group of Small Industries. RUSSELL B. ROBSON, M.D.

VITAL STATISTICS

Third Session—Founders Room, Hotel Book-Cadillac

Exhibits. MAYHEW DERRYBERRY, PH.D.

The Effect of War on Vital Statistics. JOHN T. MARSHALL.

Place of Mortality Statistics in Epidemiology. JAMES A. DOULL, M.D.

Occupational Mortality. ROBERT J. VANE.

THURSDAY, 10:30 A.M.

LABORATORY AND FOOD AND NUTRITION SECTIONS

Joint Session—Ivory Room, Hotel Statler

Presiding: FREDERICK W. FABIAN, PH.D., and HAROLD W. LYALL, PH.D.

MILK

Report of the Standard Methods Committee on Examination of Dairy Products. *Chairman,* ROBERT S. BREED, PH.D.

Report of the Standard Methods Committee on Analyzing Frozen Desserts. *Chairman,* FRIEND LEE MICKLE, SC.D.

Phosphatase Production in Dairy Products by Various Microörganisms. B. W. HAMMER, PH.D., and H. C. OLSON, PH.D.

A Modification of the Kay and Graham Phosphatase Test as a Means of Controlling the Adequate Pasteurization of Milk. J. WYLLIE, M.B.

Further Study of the Application of the Field Phosphatase Test to the Control of Pasteurization. F. W. GILCREAS and WALTER S. DAVIS.

A Simplified Procedure for the Laboratory Examination of Raw Milk Supplies. ROBERT P. MYERS, PH.D., and JOHN A. PENCE.

The New Tgem Agar for Milk Analysis. HOWARD E. LIND, C.P.H.

To What Extent Should Bacterial Counts of Milk Be Given Publicity? C. C. PROUTY.

Discussion. MILTON E. PARKER.

LABORATORY

Second Session—English Room, Hotel Statler

Presiding: ELLIOTT S. ROBINSON, M.D.

PNEUMONIA

Report of the Standard Methods Committee on Biological Products. *Chairman,* ELLIOTT S. ROBINSON, M.D.

An Immunological Study of Pneumococcal Toxins. G. BURDE and JOHN T. TRIPP, PH.D.

Present Status of Pneumococcus Classification. WHEELAN D. SUTLIFF, M.D., and ANNABEL W. WALTER.

The Pneumonia of Friedlander's Bacillus. LOUIS A. JULIANELLE, M.D.

The Bacteriological Diagnosis of Pneumonia in Relation to Chemotherapy. COLIN M. MACLEOD, M.D., and GEORGE S. MIRICK, M.D.

Antipneumococcic Serum Production and Standardization. HAROLD W. LYALL, PH.D.

The Present Status of Knowledge Concerning Influenza. FRANK L. HORSFALL, JR., M.D.

Discussion. RALPH S. MUCKENFUSS, M.D.

THURSDAY, 12:30 P.M.

FOOD AND NUTRITION

Luncheon Session—Ivory Room, Hotel Statler

Section Business.

Reports of Committees.

THURSDAY, 12:45 P.M.

DELTA OMEGA

Luncheon Session—Michigan Room, Hotel Statler

THURSDAY, 2:00 P.M.

CONFERENCE OF STATE DIRECTORS OF LOCAL HEALTH SERVICES

Washington Room, Hotel Book-Cadillac

THURSDAY, 2:30 P.M.

AMERICAN ASSOCIATION OF STATE REGISTRATION EXECUTIVES

Third Session—Hotel Detroit-Leland

AMERICAN SCHOOL HEALTH ASSOCIATION AND MICHIGAN SCHOOL HEALTH ASSOCIATION

Joint Session—Crystal Ball Room, Hotel Book-Cadillac

Presiding: CHARLES L. OUTLAND, M.D., President, American School Health Association.

EVALUATION OF SCHOOL HEALTH PRACTICES

Panel Discussion Leader: CHARLES H. KEENE, M.D.

THURSDAY, 7:00 P.M.

THIRD GENERAL SESSION

Annual Banquet—Grand Ball Room, Hotel Statler

Presiding: EDWARD S. GODFREY, JR., M.D., *President,* American Public Health Association.

Master of Ceremonies: ABNER LARNED.

Presentation of Forty Year Membership Certificates.

Announcement of Health Conservation Contest Awards.

Presentation of Diplomas to Graduates of Detroit Department of Health.

Entertainment.

Dancing.

FRIDAY, 8:00 A.M.

UNIVERSITY OF MICHIGAN ALUMNI

Breakfast Session—Michigan Room, Hotel Statler

AMERICAN SCHOOL HEALTH ASSOCIATION

Breakfast Session—Parlor F, Hotel Statler

FRIDAY, 9:30 A.M.

PUBLIC HEALTH EDUCATION SECTION AND AMERICAN SCHOOL HEALTH ASSOCIATION

Joint Session—Bagley Room, Hotel Statler

Presiding: CARL A. WILZBACH, M.D., and CHARLES L. OUTLAND, M.D.

SCHOOL HEALTH PROMOTION

Environment. EDNA A. GERKEN, C.P.H.

Instruction. MABEL E. RUGEN, PH.D.

Services. HELEN A. CARY, M.D., ELLA E. MCNEIL, R.N., and J. M. WISAN, D.D.S.

The Physician as Adviser. ARTHUR R. TURNER, M.D.

Coördination of Health and Education Agencies. WALTER WILKINS, M.D.

Discussion.

MATERNAL AND CHILD HEALTH

Fourth Session—Banquet Room, Hotel Statler

(Members of the American School Health Association are cordially invited.)

PREVENTION AND CARE OF RHEUMATIC HEART DISEASE IN CHILDREN

Basic Principles in the Care of Cardiacs under the Crippled Children's Program of the Social Security Act. BETTY HUSE, M.D.

Development of Cardiac Clinics in Indiana. HOWARD B. METTEL, M.D.

Care of Chronically Ill Cardiac Children in Institutions and Foster Homes. T. DUCKETT JONES, M.D.

Medical Social Problems of Rheumatic Children. ETHEL COHEN.

Discussion. HUGH MCCULLOCH, M.D., and WILLIAM D. STROUD, M.D.

FRIDAY, 9:30 A.M.

LABORATORY

Third Session—Washington Room, Hotel Book-Cadillac

Presiding: JOHN F. NORTON, PH.D.

WATER

Report of the Standard Methods Committee on Examination of Water and Sewage. *Chairman*, W. L. MALLMANN, PH.D.

Report of the Standard Methods Committee for the Examination of Shellfish. *Chairman*, JAMES GIBBARD.

A Study of Standard Methods for the Detection of Coliform Organisms in Raw and Treated Waters. EARLE K. BORMAN, ELIZABETH D. ROBINTON, and CHARLES A. STUART, PH.D.

Studies on the Uses of a Lauryl Sulfate-Tryptose-Lactose Broth for the Detection of Coliform Organisms. W. L. MALLMANN, PH.D., and C. W. DARBY.

Eijkman Relationships in the Various Types of Coliform Organisms. CHARLES A. STUART, PH.D., and MURIEL BAKER.

Random Thoughts on Characteristics of Coliform Bacteria. MAX LEVINE, PH.D.

A Comparative Study of Standard Agars for Determining Bacterial Counts in Water. ROBERT S. BREED, PH.D., and W. L. MALLMANN, PH.D.

Breakpoint Chlorination. A. E. GRIFFIN, PH.B., and N. S. CHAMBERLIN.

LABORATORY AND EPIDEMIOLOGY SECTIONS

Joint Session—Crystal Room, Hotel Book-Cadillac

Presiding: HAROLD W. LYALL, PH.D.

Antirabic Vaccination—Present Status. LESLIE T. WEBSTER, M.D.

Antirabic Vaccination of Dogs. HERBERT W. EMERSON, M.D.

Epidemiological Investigation of Rural Typhoid With the Aid of the VI Agglutination Test. CALISTA P. ELIOT, SC.D., and W. ROSS CAMERON, M.D.

Typhoid Vaccine Studies. Progress Report. DON LONGFELLOW, M.D., and GEORGE F. LUIPPOLE. Presented by Lieutenant Colonel GEORGE C. DUNHAM, M.D.

The Distribution of Vectors of Encephalomyelitis in Massachusetts. ROY F. FEEMSTER, M.D., and V. A. GETTING, M.D.

Epidemic Diarrhea of the New-born—Food Poisoning. JAMES G. CUMMING, M.D.

FRIDAY, 9:30 A.M.

HEALTH OFFICERS

Third Session—Grand Ball Room, Hotel Statler

Presiding: MALCOLM R. BOW, M.D.

Present Status of Pneumonia Control. DALE C. STAHLE, M.D.

Diffusion of Health and Medical Services in a Local Health Department Program. C. L. SECKINGER, M.D.

Public Health Importance of Intravenous Drip Method for Treatment of Syphilis. GEORGE BAEHR, M.D.

Children's Dentistry. K. R. GIBSON, D.D.S.

National Hospital Program. JOSEPH W. MOUNTIN, M.D.

INDUSTRIAL HYGIENE

Third Session—English Room, Hotel Statler

Quantitative Analysis by X-ray Diffraction: The Determination of Quartz. J. W. BALLARD and HELMUTH H. SCHRENK, PH.D.

Ventilation Problems in Industrial Hygiene. P. W. GUMAER.

Rapid Method of Determining Air-borne Toxic Materials. WILLIAM P. YANT.

ENGINEERING

Third Session—Ivory Room, Hotel Statler

Report of the Committee on Sewage Disposal. *Chairman,* LANGDON PEARSE.

The Detroit Sewage Treatment Works. Speaker to be announced.

The Value of 24 Hour Laboratory Control of a Water Treatment Plant. W. M. WALLACE.

The Need for Greater State Supervision of Water Works. ISADOR W. MENDELSOHN, C.E.

Microbiological Transformations in Sanitary Landfills. LEWIS V. CARPENTER,* LLOYD R. SETTER, PH.D., and E. STOFKA.

* Deceased.

VITAL STATISTICS

Fourth Session—Founders Room, Hotel Book-Cadillac

The Analysis of Heart Disease Mortality Statistics. O. F. HEDLEY, M.D.

Hospital Records as a Source of Morbidity Statistics. CLARA E. COUNCELL.

Other subjects and speakers to be announced.

FRIDAY, 9:30 A.M.

FOOD AND NUTRITION AND PUBLIC HEALTH NURSING SECTIONS

Joint Session—English Room, Hotel Book-Cadillac

Presiding: MARION W. SHEAHAN, R.N.

Nutrition Integrated in a Nursing Agency. DOROTHY HACKER, LUELLA LEWIS, R.N., and Staff Nurses.

Principles Involved in Any Integrated Nutrition Service. MARJORIE HESELTINE.

Principles Involved in Integrating Any Consultant Service. HELEN BEAN, R.N.

FRIDAY, 2:30 P.M.

FOOD AND NUTRITION SECTION, AMERICAN SCHOOL HEALTH ASSOCIATION, AND ORAL HEALTH GROUP

Joint Session—English Room, Hotel Book-Cadillac

Presiding: FREDERICK W. FABIAN, PH.D., and CHARLES L. OUTLAND, M.D.

NUTRITION AND ITS RELATION TO DENTAL HEALTH

What Can the Dental Health Workers Teach in Regard to Nutrition? WILLIAM R. DAVIS, D.D.S.

A Preschool Dental Service Program with Coördinated Nutritional Study. RICHARD C. LEONARD, D.D.S.

Nutrition Education in a Dental Program. RUTH L. WHITE.

Nutrition and Dental Health Education at Different Grade Levels in the Elementary Schools. HARRIET STONE.

Creating a Dental Consciousness Within a Community. BERTHA HOLMAN.

Discussion: F. O. PEARSON, M.D.

EPIDEMIOLOGY

Third Session—Washington Room, Hotel Book-Cadillac

Epidemiology and Laboratory Diagnosis of Infectious Jaundice (Weil's Disease). JOSEPH G. MOLNER, M.D., and JOSEPH A. KASPER, M.D.

Advances in the Treatment of Amebiasis. JOHN G. MATEER, M.D.

Accumulation and Storage of Arsenic Following Malarial Control Operations. M. M. ELLIS.

A Method of Measuring the Effectiveness of Preventive Treatment in Reducing Morbidity. C. A. SARGENT, M.D., and MARGARET MERRELL, SC.D.

FRIDAY, 2:30 P.M.

PUBLIC HEALTH NURSING SECTION AND MICHIGAN STATE ORGANIZATION FOR PUBLIC HEALTH NURSING

Joint Session—Founders Room, Hotel Book-Cadillac

COMPLETE COMMUNITY HEALTH SERVICE IN RURAL AREAS

Presiding: MARION W. SHEAHAN, R.N.

The Relationship of the Rural Community Hospital to the Rural Health Department in Meeting Community Sickness Problems. J. Moss BEELER, M.D.

Discussion: W. FRANK WALKER, DR.P.H.

Nursing Care of the Sick as a Part of Complete Nursing Service in Rural Areas. HELENE BUKER, R.N.

Discussion: VELLA YOUNG.

AMERICAN ASSOCIATION OF STATE REGISTRATION EXECUTIVES

Fourth Session—Hotel Detroit-Leland

THE TWENTY-SECOND ANNUAL HEALTH EXHIBIT

TO many delegates to the Annual Meeting, the exhibits assembled for their information are as important and valuable as the scientific program. Believing that a preview of the displays sponsored by commercial organizations would have interest for them, exhibitors have been invited to indicate what delegates may expect to see. The descriptions submitted with booth numbers follow:

ALBA PHARMACEUTICAL COMPANY

NEW YORK, N. Y. No. 44

ZEPHIRAN INDUSTRIAL, exhibited by the Alba Pharmaceutical Company, has demonstrated a remarkable application in the field of eating and drinking utensil sanitization. This sanitization agent is based upon a new chemical principle and does not contain chlorine, cresol, or heavy metals. It is virtually non-toxic and non-poisonous. In addition, it is odorless and practically tasteless in usable concentrations.

A. S. ALOE COMPANY

ST. LOUIS, MO. NOS. 8 AND 10

New and recent Public Health Laboratory equipment and devices will be on display, as well as standard and improved staple apparatus. The new Aloe-Varney Colony Counter, an improved model of the St. Louis Low Reading Turbidometer, Aloe Precision Heavy Duty Kahn Shaking Machine, a precision line of Kahn Pipettes, as well as an improved rapid reading Kahn Viewing Lamp will be shown.

THE AMERICAN ASSOCIATION OF MEDICAL MILK COMMISSIONS, INC.

NEW YORK, N. Y. No. 46

The American Association of Medical Milk Commissions and the Wayne County Medical Milk Commission are coöperating in the presentation of an exhibit stressing the value of Certified Milk. The safety, cleanliness, nutritional value, as well as the extra medical and veterinary supervision will be demonstrated. The three farms producing Certified Milk for the Detroit market will be open for inspection during the meeting, and competent guides will be provided for those interested in visiting the farms.

AMERICAN CAN COMPANY

NEW YORK, N. Y. NOS. 7, 9, AND 11

Convention delegates are invited to visit Booths 7, 9, and 11, where information is available concerning those aspects of commercially canned foods which are of particular interest to members of the American Public Health Association. The Ameri-

can Can Company's modern, single-service, paper milk container will also be featured.

AMERICAN INSTRUMENT COMPANY

SILVER SPRING, MD. No. 21

Among the instruments to be exhibited by the American Instrument Company will be the following: incubators, pipetting machines, anaerobic jars, stainless steel test tube racks, test tube washers, neutral wedge photometers, photoelectric photometers, abridged spectrophotometers, serological baths, circulating pumps, pH meters, null indicators, machines for cutting glass, tubing, etc., and centrifuges. A technician will be in attendance to answer questions relative to the company's line of instrumentation for public health and other laboratories.

AMERICAN STERILIZER COMPANY

ERIE, PA. No. 77

THE BORDEN COMPANY

CHICAGO, ILL. No. 45

The exhibit will display in graphic form the economy of milk and its products.

CARNATION COMPANY

OCONOMOWOC, WIS. Nos. 58 and 59

Be sure to visit the Carnation Company exhibit in Booths 58 and 59 where you will see displayed an interesting model of the famous Carnation Milk Farms where cattle breeding and feeding experiments are carried on for the purpose of improving the dairy herds supplying the many Carnation evaporating plants. The story of Carnation's program of supervision of raw milk sources and the careful processing of Irradiated Carnation Milk is also told in a unique manner.

THE COCA-COLA COMPANY

ATLANTA, GA. No. 38

Coca-Cola will be served to the delegates at the 69th Annual Convention in Detroit with the compliments of The Coca-Cola Company.

THE CREAM OF WHEAT CORPORATION

MINNEAPOLIS, MINN. No. 78

The New 5-Minute "CREAM OF WHEAT" will be featured here. This improved cereal is completely cooked in 5 minutes and has been fortified with additional Vitamin B_1 (Wheat Germ), iron, calcium and phosphorus.

R. B. DAVIS COMPANY

HOBOKEN, N. J. No. 85

Cocomalt will be served. Year by year Cocomalt has kept abreast of growing nutritional knowledge. As the necessity of Vitamin D for routine administration was demonstrated, Cocomalt added adequate Vitamin D. When rather widespread deficiency of Vitamin A was shown, this Vitamin was increased in Cocomalt. Now Vitamin B_1 has been added to Cocomalt—75 units per ounce. Yet the addition of this important vitamin has not increased the price nor lowered its palatability.

DIFCO LABORATORIES, INC.

DETROIT, MICH. No. 82

Exhibit of the dehydrated culture media prepared in accordance with the formulae of the American Public Health Association's "Standard Methods of Water Analysis" and "Standard Methods for the Examination of Dairy Products," as well as other media useful in "Public Health" bacteriology. Demonstration of the *new* Bacto-S S Agar and *revised* Bacto-MacConkey's Agar in the isolation of Shigella and Salmonella strains, and media for identification of members of the typhoid-paratyphoid-dysentery group.

THE DIVERSEY CORPORATION

CHICAGO, ILL. No. 34

Have you a problem in food sanitation? You will find the answer in Booth No. 34, sponsored by The Diversey Corporation of Chicago. Demonstration of Diversey products widely used for cleaning and sterilizing operations in all types of food plants will be made. The Company's technical experts will be on hand to consult with health officials, plant operators, and other interested parties. Several new Diversey products, developed within the past year, will be on display.

EISELE & COMPANY

NASHVILLE, TENN. No. 72

Eisele & Company, Nashville, Tenn., and New York, N. Y., will, in addition to their regular line of hypodermic syringes, needles, and self-sterilizing thermometers, display their new Rust Free Suture needles. These should be of interest to public health officials because the war has disturbed the usual importations which comprise most of the suture needles used in the United States.

J. H. EMERSON COMPANY

CAMBRIDGE, MASS. Nos. 74 AND 75

In Booths 74 and 75, the J. H. Emerson Company will show the latest models of the Emerson Respirator or "iron lung" and also other medical equipment manufactured by this company including a new model resuscitator and inhalator combination and a recently developed fever therapy cabinet. The respirator will be equipped with many new features which greatly add to the convenience and care of the patient and to his comfort.

EVAPORATED MILK ASSOCIATION

CHICAGO, ILL. No. 61

The Evaporated Milk Association will have on exhibit educational materials suitable for use in public health nutrition programs. These booklets cover the subjects of infant feeding, low cost family feeding, mother and child care, preschool diets, and the preparation of food in quantity. Also available are technical publications and reprints of scientific research on the nutritive value and uses of evaporated milk.

EX-CELL-O CORPORATION

DETROIT, MICH. No. 43

The Ex-Cello-O Corporation's Pure-Pak exhibit will include a display of finished Pure-Pak single-service containers for milk and other dairy products, in quart, pint, and half-pint sizes; a display of the flat, printed cartons from which these containers are formed by Pure-Pak equipment (as well as filled and sealed), and the board from which converting plants manufacture these blanks. There will also be descriptive literature covering the entire Pure-Pak process and the Pure-Pak machines.

THE J. B. FORD SALES COMPANY

WYANDOTTE, MICH. No. 12

The J. B. Ford Sales Company, distributors of Wyandotte Products manufactured by the world's oldest and largest producer of specialized cleaning materials, will feature the following: Wyandotte Steri-Chlor—a non-corrosive chlorine germicide for use wherever food is prepared or served. Samples of this dry powder are available; Wyandotte Dishwashing Products—Five different materials to fit different water conditions; Wyandotte Bottle Washing Alkalies—To satisfy bottle washing requirements four Wyandotte Products are produced for this use.

GENERAL ELECTRIC X-RAY CORPORATION

CHICAGO, ILL. Nos. 23 AND 25

The General Electric X-Ray Company will exhibit its unit for photoroentgenography, the new case finding method to detect tuberculosis by

photographing the fluoroscopic image on a 4" by 5" film for direct diagnosis. Tests made at the Herman Kiefer Hospital in Detroit have shown the photoroentgenographic method to be 97.4 per cent as accurate as conventional roentgenography but only one-tenth as costly. Actual photoroentgenograms will be shown in addition to the equipment necessary to produce them, thus giving visitors an opportunity to see for themselves the diagnostic quality of the small films.

GERBER PRODUCTS COMPANY

FREMONT, MICH. No. 13

Ten new foods which have recently been added to the Gerber Foods will be on display in the Gerber Booth. Copies of both the professional literature and the booklets for mothers are there for your examination and will be sent to you on request.

GILLILAND LABORATORIES, INC.

MARIETTA, PA. No. 63

The Gilliland Laboratories will exhibit the Biological Products in which they specialize. Since 1882 this House has developed and produced Biological Products exclusively. New products have been added to the line only after their worth has been proved. The representative in charge of this exhibit will be glad to give information on the products produced at their Laboratories. A cordial invitation is extended to all members to visit this booth.

H. J. HEINZ COMPANY

PITTSBURGH, PA. No. 47

Those interested in prescribing for the feeding, especially of infants, older children, or adults will be interested in the Heinz exhibit where Strained and Junior Foods are displayed. Mr. L. A. Davis and Mrs. Zola Clintsman will be in attendance and will be happy to supply information on these foods. The eighth edition of the popular Heinz Nutritional Charts, containing greatly expanded charts and new data on vitamin content of foods, is ready and will be mailed on request.

HOBART MANUFACTURING COMPANY

TROY, OHIO No. 41

Hobart will display new equipment for utilizing two of the generally accepted methods for sanitizing tableware used in public eating places. The new Hobart Model AMC-5, an automatically controlled glass and dish washer, provides for a practical application of the time and temperature method—simple automatic control insures operation of both wash and rinse in accordance with predetermined standards. The Hobart application of the ultra-violet ray method for sanitizing glasses insures proper timing and promotes regular use. Patrons are served with glasses taken from the Hobart Saniray Unit at the instant of serving, eliminating any question as to whether or not the glasses have actually been sanitized. Our representative in attendance will welcome the opportunity of discussing any phase of dish washing for public eating places, with members and guests of the American Public Health Association.

HYGEIA, THE HEALTH MAGAZINE AMERICAN MEDICAL ASSOCIATION

CHICAGO, ILL. No. 80

In Booth No. 80, there will be on display copies of HYGEIA, The Health Magazine, and various books and pamphlets published by the American Medical Association. Health officers, nurses, and public health workers will find in HYGEIA informative articles on such phases of health as control of epidemics, home sanitation, medical hygiene, prenatal care, healthful recreation, and kindred subjects. Also, in this booth will be shown charts and diagrams relating to heart disease.

INTERNATIONAL BUSINESS MACHINES CORPORATION

WASHINGTON, D. C. NOS. 55, 56, AND 57

THE JONES METAL PRODUCTS COMPANY

WEST LAFAYETTE, OHIO No. 48

The Jones Metal Products Company exhibit will be devoted to the Relax Bed Pan described by many doctors as an advancement in medicine because it aids recovery. It has been accepted by the Phelan Fund and approved by the Anatomical Department of the University of California. This pan eliminates heavy lifting, solves accident and soiled linen problems, is easy to clean and handle, and assures absolute comfort for the patient.

KELLOGG COMPANY

BATTLE CREEK, MICH. No. 81

The Kellogg Company will display its complete line of ready-to-eat cereals in packages featuring the Waxtite heat-sealed inner wrap which insures the fresh crispness of the products. Samples of Pep 30% Bran Flakes, now fortified with Vitamins B_1 and D will be available. Complete information concerning the manufacture and food value of the cereals, and vitamin and calorie charts of special interest to the nurse who is diet-minded will be distributed.

THE KOLYNOS COMPANY

NEW HAVEN, CONN. No. 14

The Kolynos Company takes pleasure in announcing the acceptance of Kolynos Dental Cream for inclusion in the list of accepted dental remedies of the Council on Dental Therapeutics of the American Dental Association. Kolynos Dental Cream is a concentrated dentifrice that contains no added water. When used one-half inch on a dry brush, Kolynos produces a foamy cream in the mouth that assists the brush in cleansing and polishing the teeth without harmful abrasive action.

LEDERLE LABORATORIES, INC.

NEW YORK, N. Y. NOS. 3, 4, 5, AND 6

The identification of types and the results of serum, sulfapyridine, and the combination of drug and serum in the treatment of pneumonia are the featured subjects of Lederle's exhibit at Booths Nos. 3, 4, 5, and 6. Charts on experimental phagocytosis, temperature and pulse rates, fatality rates in New York City pneumonia control programs and average duration of the acute stage in pneumonia, based on studies of Bullowa, Finland, and others, show graphically the clinical results in pneumonia therapy with serum alone, with sulfapyridine alone, and with the combination of serum and sulfapyridine. The two other sections of the Lederle Booth deal with the diagnosis of tuberculosis with Vollmer Patch Test and with the subject of scarlet fever. A member of the Lederle staff will be on hand for consultation.

LILY TULIP CUP CORPORATION

NEW YORK, N. Y. NOS. 18 AND 20

J. B. LIPPINCOTT COMPANY

PHILADELPHIA, PA. No. 73

Among the newer Lippincott works of interest to public health workers is *Pneumonia and Its Nursing Care*, by Ensworth and Greenwood. *Your Child's Development and Guidance Told in Pictures*, by Louis Hayden Meek, Ph.D., is another new book which is gaining rapidly in popularity. Others are Zabriskie's *Mother and Baby Care in Pictures*, Hasenjaeger's *Asepsis in Communicable-Disease Nursing*, Law's *Baby Care*, and Young's *Quick Reference Book for Nurses*. These and others will be on display.

THE MACMILLAN COMPANY

NEW YORK, N. Y. NOS. 1 AND 2

At the Macmillan booths will be featured five

new books of especial interest to public health workers: *Care of Poliomyelitis*, by the National Organization for Public Health Nursing new consultant in orthopedic nursing, Jessie Stevenson; the third edition of the N.O.P.H.N. *Manual of Public Health Nursing; Public Health Administration in the United States* 2d ed. by Cornell's Dr. Wilson G. Smillie; *Community Hygiene*, by Elizabeth Soule and Christine Mackenzie; and *Getting Ready to be a Mother*, 4th ed., by Carolyn Van Blarcom and Hazel Corbin.

MERCK & COMPANY, INC.

RAHWAY, N. J. NOS. 69 AND 70

The newer chemotherapeutic developments, in which Merck & Company, Inc. has played so prominent a part, will be on display at the Merck exhibit. Among these will be Sulfapyridine, Sulfathiazole, Vitamin B_1, Riboflavin, Nicotinic Acid, and Pyridoxine (Vitamin B_6). Tryparsamide Merck and the Arsphenamines will be displayed among the other products of pertinent interest to all associated in public health work. Informative literature on all of these products will be available. Do not forget to register at the Merck booth.

MINE SAFETY APPLIANCES COMPANY

PITTSBURGH, PA. No. 22

Both new and already established safety equipment will be on display. Some newly developed products will be: M.S.A. Ear Defenders, M.S.A. Model No. 2 Explosimeter, and the M.S.A. Metal Fume Respirator. Other items to be exhibited include: gas-detecting and indicating instruments, such as Carbon Monoxide Detector, Indicator, and Alarm; Benzol Indicator; dust-counting and sampling apparatus consisting of Midget Impinger, Electrostatic Dust and Fume Sampler, and Dust-counting Microscope; a complete line of dust respirators, gas masks, breathing apparatus, and H-H Inhalator; and miscellaneous safety products including head protection, first aid, and goggles.

NATIONAL DAIRY COUNCIL

CHICAGO, ILL. NOS. 17 AND 19

The exhibit of the National Dairy Council is a new type of display you won't want to miss seeing. The display shows how "Milk Completes Your Daily Meals." Beautiful natural-color, illuminated transparencies picture an adequate breakfast, luncheon, and dinner. Animated bars light-up consecutively to show the amounts of important food factors that a quart of milk adds to the daily meals. Illustrative material will be available at the exhibit.

THE NATIONAL DRUG COMPANY

PHILADELPHIA, PA. No. 42

The National Drug Company presents Biologicals, Ampuls, Ampul-Vials, Pharmaceuticals, Antitoxins, Bacterial Vaccines, Smallpox Vaccine, and newer Biological products. Physicians are cordially invited to visit us.

NATIONAL LIVE STOCK AND MEAT BOARD

CHICAGO, ILL. No. 15

The National Live Stock and Meat Board's exhibit will portray Meat as a source of the essential food elements, protein, fat, carbohydrate, calcium, phosphorus, iron, copper and six vitamins. Wax models of foods will also be displayed.

NATIONAL TECHNICAL LABORATORIES

SOUTH PASADENA, CALIF. No. 16

This exhibit features the automatic preparation of sterilizing rinse solutions for fountains and bars through Sterimatic Fountain Sterilizers. The Sterimatic Fountain Sterilizer provides automatic chlorine and pH control for rinse water in fountains and bars. Completely automatic and tamper proof, it assures uniform concentration of stable chlorine type germicide as specified by health ordinances. Public health authorities will appreciate the increased inspection efficiency and the additional safeguards to public health made possible by Sterimatic.

NATIONAL X-RAY SURVEYS, INC.

ORANGE, N. J. No. 62

NURSE PLACEMENT SERVICE

CHICAGO, ILL. No. 64

Nurse Placement Service. *Sponsored by Midwest Division, American Nurses Association, Approved Bureau National Organization for Public Health Nursing.* This booth is set up as a temporary branch of the Chicago Headquarters of the Service with facilities for personal service by the Executive Director, Miss Anna L. Tittman, R.N., to employers seeking personnel and nurses or technicians seeking placement or vocational counseling. The backdrop of the booth is constructed as a casement window providing a view in model of a variety of occupational situations. Literature distributed.

PARKE, DAVIS & COMPANY

DETROIT, MICH. NOS. 31, 33, 35, 37, AND 39

Parke, Davis & Company's Modernistic Exhibit, built of white mahogany and black walnut, will occupy spaces 31, 33, 35, 37, and 39 adjacent to the registration desk. Featured in this exhibit will be antisyphilitic agents, such as Mapharsen and Thio-Bismol; various biological products, including Antipneumococcic Serum, Scarlet Fever Products, Streptococcus Antitoxin, Tetanus Antitoxin, Tetanus Gas-Gangrene Antitoxin, Meningococcus Antitoxin, Smallpox Vaccine and Typhoid Vaccine; sex hormones including Theelin and Theelol; posterior lobe preparations comprising Pituitrin, Pitocin and Pitressin; and various Adrenalin Chloride preparations. Several members of the Parke-Davis Staff, including Drs. L. T. Clark, D. K. Kitchen, and R. A. Perkins, will be in attendance.

PET MILK SALES CORPORATION

ST. LOUIS, MO. NOS. 67 AND 68

An actual working model of a milk condensing plant in miniature will be exhibited by the Pet Milk Company in Booths 67 and 68. This exhibit offers an opportunity to obtain information about the production of Irradiated Pet Milk and its uses in infant feeding and general dietary practice. A miniature Pet Milk can will be given to everyone who visits the Pet Milk booth.

PETROLAGAR LABORATORIES

CHICAGO, ILL. No. 83

Petrolagar Laboratories, Inc., offer, in addition to samples of the five types of Petrolagar, an interesting selection of descriptive literature and complete information on the treatment of constipation. The S.M.A. Corporation, in addition to the Bovinine Company, will also be represented at Booth No. 83. Those interested in infant feeding will find new and useful facts pertaining to infants deprived of breast milk.

PHILIP MORRIS & COMPANY, LTD., INC.

NEW YORK, N. Y. No. 76

Philip Morris & Company will demonstrate the method by which it was found that Philip Morris Cigarettes, in which diethylene glycol is used as the hygroscopic agent, are less irritating than other cigarettes. Their representative will be happy to discuss researches on this subject, and problems on the physiological effects of smoking.

RALSTON PURINA COMPANY, INC.

ST. LOUIS, MO. No. 71

Ralston Purina Company cordially invites A.P.H.A. delegates to register at Booth No. 71 for: Ry-Krisp and Ralston Wheat Cereal Samples; Allergy Diets giving food lists and special recipes for wheat, egg, and milk-free diets; Ry-Krisp Low Calorie Diets giving balanced selective food lists for the reducing patient; A brand new 16 page illustrated book on whole wheat; Charts, tables, and reports on the most recent studies of Vitamin B_1.

REXAIR, INC.

DETROIT, MICH. No. 36

Rexair, a home and institutional conditioning unit to remove dust from air and furnishings by collecting and passing dust-laden air through a swirling, turbulent body of water, employs both washing and centrifuge. Much used as a medium for vaporization of medicaments in the treatment of respiratory disorders when indicated. Small, sturdy, attractive in design, precisely manufactured and nationally distributed through factory branches.

THE W. B. SAUNDERS COMPANY

PHILADELPHIA, PA. No. 60

The W. B. Saunders Company welcomes you to its exhibition at Booth No. 60 of its complete line of books on Medicine, Nursing, and Health. Among these will be Bauer and Hull—*Health Education;* Bolduan—*Public Health and Hygiene;* Boyd—*Preventive Medicine* (New Edition); Geiger—*Health Officer's Manual;* Conrad and Meister—*Teaching Procedures in Health Education;* Bryan—*Art of Public Health Nursing;* Stokes—*Clinical Syphilology;* Stokes—*Dermatology and Syphilology* (New Edition); Pelouze—*Gonorrhea;* and many others.

THE SEALRIGHT COMPANY

FULTON, N. Y. Nos. 51, 52, AND PART OF 53

SEALTEST, INC.

NEW YORK, N. Y. Nos. 30 AND 32

E. R. SQUIBB & SONS

NEW YORK, N. Y. No. 29

Visitors attending the American Public Health Association convention are cordially invited to visit the Squibb Exhibit in Booth 29. The complete line of Squibb Arsenicals, Biologicals, and Specialties of particular interest to workers in the Public Health field will be featured, together with a number of interesting new items. Well informed Squibb representatives will be on hand to welcome you and to furnish any information desired on the products displayed.

STANLEY SUPPLY COMPANY

NEW YORK, N. Y. No. 24

Many sundry items of interest to the members of the public health profession will be exhibited. The new "Stanley" bag will be featured. There will be on display for the first time a communicable disease gown made of paper that is amazingly strong, will not rustle, and can be used over and over again.

UNITED FRUIT COMPANY

NEW YORK, N. Y. Nos. 49 AND 50

Latest Facts on Banana's Food Value

New clinical and nutritional studies on the banana have been undertaken, and the findings have been recently published. These scientific papers should be of interest to physicians, nutritionists, and other public health workers. We hope you will visit and register at our booth so that we may have the pleasure of supplying you with this new and important information concerning bananas.

WALLACE & TIERNAN COMPANY, INC.

NEWARK, N. J. Nos. 27 AND 28

BREAK-POINT Chlorination—the most recent development in taste and odor control for water works practice—will be featured at the W & T exhibit. Animated charts showing the relationship of chlorine residuals to applied chlorine, illustrating the "BREAK-POINT"—a demonstration of the method of determining the "BREAK-POINT" and case histories of successful use of the process will be featured.

WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY

NEW YORK, N. Y. Nos. 65 AND 66

Showing the Westinghouse STERILAMP—Science's latest contribution to the effective control of surface and air-borne bacterial contamination by means of selective untra-violet radiation. Bactericidal ultra-violet radiation and its uses in the field of Public Health will be described verbally and pictorially. Sanitization equipment utilizing STERILAMPS will be on display. Westinghouse invites members and visitors to Booths Nos. 65 and 66.

WISCONSIN ALUMNI RESEARCH FOUNDATION

MADISON, WIS. Nos. 79 AND 80

Detroit, according to United States Weather Bureau statistics, has only 100 clear days per year. Poorest sunshine is from November to April when there are only 36 clear days in six months! These and many other facts relating to other cities and resulting Vitamin D deficiencies, as well as Vitamin D milks, foods, medicinals, and clinical literature, will be featured by the Wisconsin Alumni Research Foundation exhibit. All visiting public health officials are very cordially invited to stop at Spaces 79 and 80.

THE YEAR BOOK PUBLISHERS, INC.

CHICAGO, ILL. No. 26

The 1940 *Year Book of Public Health*, edited by J. C. Geiger, Director of Public Health, City and County of San Francisco, will feature the exhibit of the Year Book Publishers, Inc., Chicago. This new book will be of immediate and practical interest to everyone concerned with public health problems, because it will present, in concise and readable form, all the latest developments and important advances in the field. This new title in the 40-year-old Year Book series will be generously illustrated and will contain Dr. Geiger's personal opinions on many of the questions discussed.

Springwells Pumping Station and Filtration Plant

Points of Scientific Interest in Detroit

SCIENTIFIC trips of interest to those who will attend the Sixty-ninth Annual Meeting of the American Public Health Association in Detroit will afford visitors an unusual opportunity to learn of public health activities which three times gave Detroit first place in the Inter-Chamber Health Conservation Contest.

The newly constructed sewage plant made possible by a contribution of $9,000,000 of the total cost by the Public Works Administration embodies the best engineering thought that could be obtained. It is situated on a 72 acre tract on West Jefferson Avenue at the River Rouge and is capable of treating sewage for a population of 2,500,000 persons. More than 315,000,000 gallons of sewage daily passes through the plant at a continuous speed of 10 miles an hour. The great incinerators connected with the plant reduce 600 tons of solids to 85 tons of dry ash. There are 600 miles of huge interceptors and trunk sewers, and more than 2,000 miles of arms and lateral sewers. A trip has been arranged to the sewage disposal plant and visitors will be allowed time to study its operation.

The present Water Department of Detroit originated in 1824 with one small pump and an elevated reservoir of oak planks, and a capacity of 13,000 gallons. Hollow logs having a bore of 2 to 3¼ inches were used as distributing mains. From this humble beginning the department has developed into a gigantic organization which pumps 19,245,680,000 gallons of water to 1,916,714 persons and is capable of pumping many millions of gallons more without adding to the present equipment.

What equipment and processes are necessary to take raw river water and produce and deliver to any point in and around Detroit a clear, pure water fitted for domestic use? The water is taken from the river by means of a lagoon and intake house located at the east end of Belle Isle. From here a 15½

foot and 10 foot tunnel can deliver a Maximum of 1,312,000,000 gallons a day to the supply works at Water Works Park and Springwells Stations. The Water Works Park (constructed in 1923) and the Springwells (constructed in 1935) Filtration Stations consist of mixing chambers, coagulation basins, filters, and filtered water reservoirs. Raw water entering the mixing chambers is treated with chlorine and ammonium sulfate for the purpose of sterilizing the water. Aluminum sulfate is added as a coagulent. When the natural bicarbonate of the water and the aluminum sulfate have reacted to form aluminum hydroxide, a gelatinous, insoluble precipitate, the water is run slowly through settling basins where most of the suspended matter settles to the bottom. The remainder of the suspended material is removed by passing through the rapid sand filters.

The City of Detroit distributes water to 22 cities and villages and portions of 10 townships. About 4,600 miles of pipe varying in size from 4 to 72 inches are necessary for distribution to the areas using Detroit water. The average cost to the ultimate consumer is less than $0.12 per 1,000 gallons. Bacteriological and chemical analyses are made from the time it is taken from the river until the time it is to be consumed. Busses will transport visitors to the Springwells Plant as one of the scientific trips of the meeting.

Four large municipally owned incinerators for the disposal of garbage are in operation in Detroit. They are built within the city limits and are smokeless, noiseless, odorless, and economical.

How safe are workers from industrial health hazards in Detroit industries? The Industrial Hygiene Divisions of the Michigan and Detroit Departments of Health have arranged with Detroit industries to show the protection afforded in some of the leading industries.

An operation known as "metal spinning" is used in the manufacture of

Air view of Sewage Disposal Plant

special alloy bearings for automobile and airplane engines and for wear-resistant coatings on brake drums. Several interesting installations for the control of metallic fumes and vapors from these operations may be seen in Detroit. Fascinating examples of the elimination of hazards in glass manufacture by the use of automatic handling and processing machinery are found. The rubber industry here is represented by several plants that have devised means of handling potentially harmful solvents, pigments, and compounding materials in order that workers may be protected against the development of dermatoses and respiratory afflictions. Some of these operations are considered models of safe practice, efficient production, and neat appearance. Ingenious ventilating systems can be seen on traveling furnaces handling molten metal. These systems permit the most efficient use of air in removing fumes and gases from such furnaces. The principles illustrated here can be used on many other difficult fume control problems. Solvents used to remove oil and grease from all kinds of metal products must be carefully handled to prevent poisoning or intoxication of workers. Large automatic installations of safe degreasing equipment can be seen in Detroit automobile plants.

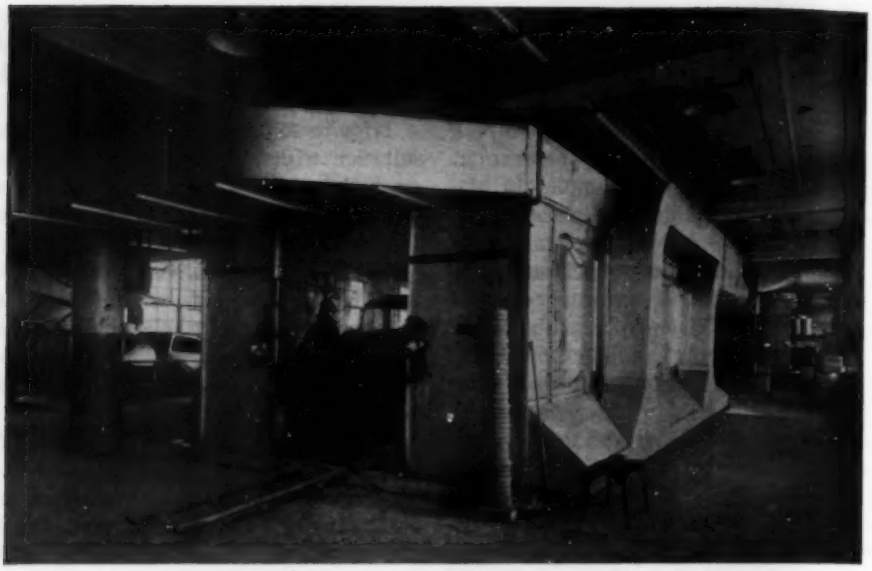
Trips to some of the plants and consultation with industrial hygiene workers will be possible at hours which do not conflict with the sessions of the Industrial Hygiene Section.

The Tuberculosis Division of the Detroit Health Department is unique in that under it, the whole control program including case finding, hospitalization, follow-up, and rehabilitation is administered.

Those who are especially interested in case finding and other field activities will want to visit the tuberculosis clinic at the Herman Kiefer Hospital where all of this work centers. A special x-ray clinic employing miniature films of the 4 x 5 inch size is located at 3125 Hastings Street where a special effort is being made to find tuberculosis in a high mortality area. Miniature film equipment is also in use in the clinic at the Herman Kiefer Hospital.

The hospitalization program may be of greater interest to others and if so a trip through the Herman Kiefer Hospital Tuberculosis Division will indi-

Parke, Davis & Company, Detroit, Mich.



Well ventilated booth for automobile body finishing

cate the up-to-date hospital care provided for tuberculosis. In conjunction with this the William H. Maybury Sanatorium at Northville, twenty-five miles out, is well worth a visit, with its 845 beds, 130 of which are for children. Here also of interest are studies going on both in laboratory and clinical research in tuberculosis.

In addition to the two hospitals owned and operated by the Health Department, there are a fluctuating number of beds used in private institutions under the supervision of the Tuberculosis Division. These arrangements vary from special wards in general hospitals to beds in private tuberculosis sanatoria which are subsidized, for the care of indigent or part pay patients, by public funds.

With this program there are available sufficient beds to avoid building up any formidable waiting list. At present there are between 2,200 and 2,300 beds occupied by county patients.

A point of special interest to visitors should be the Rehabilitation Project for recovered tuberculosis patients sponsored by the WPA, the Public Welfare Department, and the Health Department. Here some 300 or more ex-patients are engaged in work suited to their physical strength, under careful supervision. The project is located on the second floor of the building at 600 Harper Avenue.

The Detroit Edison Company erected a service building a year or two ago to accommodate several divisions of the company and to provide a high percentage of usable areas with comfortable working conditions and low maintenance cost. The building is one of much study by those who are interested in promoting the health of workers. It is air conditioned throughout, has a unique lighting system of artificial lighting, and on all floors glass block is used instead of windows.

The Parke, Davis Company laboratories and pharmaceutical manufacturing plant is known throughout the

world. Here the findings of research are made usable and distributed through subsidiary plants to advance health and to combat disease.

Wayne University College of Medicine invites the members of the American Public Health Association to visit its laboratories and study the facilities and plans of a municipal medical school.

Health educators may wish to see the introduction of lessons on health as part of the course of study given in elementary adult evening school classes where those who go to learn English learn the principles of healthful living as a language lesson. The evening schools of the Detroit Public School system will be open to visitors during the week of the meeting. Likewise, the interest of Detroit foodhandlers in learning the safe practices of their occupation may be observed in the daily conferences of the Foodhandlers Division of the Detroit Department of Health.

The Teaching Center of the Nursing Division of the Health Department, located on Gratiot Avenue, is the hub from which radiates the continuing education of nurses who are employed in public health. Students from the Nursing Schools of Wayne University and the University of Michigan are sent to the center for field training as well as to Alger Center of the Visiting Nurse Association.

Wayne County Garbage and Rubbish Incinerators

In order to provide trips for those who are interested in visiting Merrill Palmer School, the W. K. Kellogg Foundation at Battle Creek, the Children's Fund of Michigan, and the laboratories of the Michigan Department of Health at Lansing, representatives will be available at Local Committee headquarters in the Hotel Book-Cadillac to make arrangements or to provide information regarding the activities of these organizations. Members of the staffs of the Detroit Public Schools will arrange for trips to special schools, and the Health Department staff will plan visits to clinics and health department activities.

ASSOCIATION NEWS

SIXTY-NINTH ANNUAL MEETING
DETROIT, MICH., OCTOBER 8–11, 1940
HEADQUARTERS
Book-Cadillac Hotel and Hotel Statler

RAILROAD FARES FROM VARIOUS POINTS TO DETROIT, MICH.

AMERICAN PUBLIC HEALTH ASSOCIATION

OCTOBER 8–11, 1940

From	*One-way Pullman Travel*	*Round trip Pullman Travel*	*One-way Lower*	*One-way Upper*
Atlanta, Ga.	$22.24	$36.40	$5.80	$4.40
Baltimore, Md.	18.00	33.70	4.50	3.10
Boston, Mass.	23.30	42.75	5.25	3.60
Buffalo, N. Y.	8.40	15.10	2.10	1.45
Chicago, Ill.	8.55	16.65	2.65	1.80
Cleveland, Ohio	4.90	9.65	2.65	1.80
Dallas, Tex.	34.92	56.35	8.95	6.80
Denver, Colo.	39.61	63.25	9.45	7.20
Duluth, Minn.	21.85	37.20	5.25	4.00
Fort Worth, Tex.	34.92	56.35	8.95	6.80
Indianapolis, Ind.	8.05	15.70	2.65	1.80
Jacksonville, Fla.	32.42	51.80	8.40	6.40
Kansas City, Mo.	22.33	37.35	5.25	4.00
Louisville, Ky.	11.20	20.80	3.15	2.20
Los Angeles, Calif.	74.71	106.95	18.90	14.40
Memphis, Tenn.	22.40	37.30	5.80	4.40
Milwaukee, Wis.	11.10	20.50	3.20 *	2.35 *
Minneapolis, Minn.	20.39	35.00	4.50	3.40
Nashville, Tenn.	17.01	28.60	5.30	3.80
New Orleans, La.	32.90	52.85	8.40	6.40
New York, N. Y.	21.50	39.75	4.50	3.10
Omaha, Nebr.	23.11	39.10	5.80	4.40
Philadelphia, Pa.	19.40	36.25	4.50	3.10
Pittsburgh, Pa.	8.85	17.25	2.65	1.80
Portland, Ore.	72.89	106.95	18.40	14.00
Salt Lake City, Utah	53.34	76.45	13.40	10.20
San Francisco, Calif.	74.71	106.95	18.90	14.40
Seattle, Wash.	72.89	106.95	18.40	14.00
St. Louis, Mo.	14.90	26.30	3.15	2.20
Washington, D. C.	18.00	33.70	4.50	3.10
Montreal, Que.	19.25	34.65	4.20	2.90
Halifax, N. S.	40.60	69.25	8.95	6.70
Ottawa, Ont.	16.25	29.25	4.10	3.05
Quebec, P. Q.	24.90	44.80	6.20	4.50
Toronto, Ont.	7.75	13.95	2.10	1.45
Vancouver, B. C.	72.89	106.95	19.20	14.60

* Seat to Chicago

Detroit Art Center

DETROIT HOTELS

Hotel	Room Capacity	Single Room: Without Bath	Single Room: With Bath	Double Room: Without Bath	Double Room: With Bath
Abington	336		$3.00 up		$4.00–$5.00
Barlum	800		2.00 "		3.00– 4.00
Belcrest	400		3.00 "		4.00– 5.00
Book-Cadillac	1,200		3.00 "		5.00– 6.00
Briggs	200		2.00 "		3.00– 4.00
Detroit Leland	800		2.50 "		4.00– 5.00
Fairbairn	400	$1.25	2.50 "	$2.50	3.00– 3.50
Fort Shelby	900		2.50 "		4.00– 5.00
Imperial	200		2.00 "		2.50– 3.50
Lee Plaza	475		3.00 "		5.00– 6.00
Norton	250	1.25	2.00 "	$2.50–$2.75	3.00– 4.00
Palmetto	324		2.50 "		4.00– 5.00
Prince Edward, Windsor	250		2.50 "		4.00– 5.00
Savarine	500	1.50	2.25 "	$2.50	3.25– 5.00
Statler	1,000		3.00 "		5.00– 5.50
Tuller	800		2.00 "		3.50– 4.50
Wardell	650		3.00 "		4.50– 5.50
Webster Hall	800	1.50	2.00 "	2.50	3.50– 4.00
Whittier	850		3.00 "		4.50– 5.00
Wolverine	500		1.50 "		2.50– 4.00

.....(Cut off on this line and mail to the hotel of your choice).....

HOTEL RESERVATION BLANK FOR THE DETROIT MEETING AMERICAN PUBLIC HEALTH ASSOCIATION, OCTOBER 8–11, 1940

To .....
(Name of Hotel)

Please reserve for me ..... rooms for ..... persons for the A.P.H.A. Meeting.

Single room ..... Double room .....

Maximum rate per day for room $..... Minimum rate per day for room $.....

I expect to arrive ..... If date of arrival is changed I will notify you at least 24 hours in advance.

Please acknowledge this reservation.

Name .....

Street address .....

City ..... State .....

PROPOSED AMENDMENTS TO THE CONSTITUTION OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

The Committee on Constitution and By-laws, composed of Henry F. Vaughan, Dr.P.H., *Chairman*, Haven Emerson, M.D., and W. S. Rankin, M.D., propose several amendments to the Constitution. Article V of the Constitution, which appears in the 1939–1940 *Year Book* of the Association, provides that the Constitution may be amended "by a two-thirds vote of the Fellows of the Association present and voting at an Annual Meeting, provided that the specific amendment to be acted upon is published in the official publication of the Association not less than thirty days prior to the meeting, and provided further that the amendment has received the approval of the Governing Council."

(Approval by the Governing Council will be sought at the first session to be held October 7 and these items will appear on the ballot given to all Fellows registered at the Annual Meeting.)

PROPOSED AMENDMENTS

New material in italics, material to be deleted in (parentheses).

ARTICLE III GOVERNING COUNCIL, A—Composition, item 2, paragraph 2:

If one of these members is elected a Section Chairman, Vice-Chairman, or Secretary, or appointed the representative of an Affiliated Society *or a Regional Branch*, a new Councilor to fill such vacancy shall be elected by the Governing Council.

ARTICLE III GOVERNING COUNCIL, E—Functions, item 3:

(To submit to the vote of the Association all resolutions which have received the approval of the Governing Council.) *To consider all resolutions proposed for approval in the name of the Association, and to receive and act upon a report from a committee on resolutions appointed by the President at each annual meeting.*

ARTICLE III GOVERNING COUNCIL, E—Functions, item 4:

To elect and establish qualifications for Fellows, (and) Honorary Fellows, *Life Members*, Affiliated Societies *and Regional Branches, and to recognize Associated Organizations* as provided in the By-laws.

ARTICLE III GOVERNING COUNCIL, E—Functions, item 5:

To elect the Executive Board and the officers of the Association *with the exception of the Chairman of the Executive Board and the Executive Secretary.*

ARTICLE III GOVERNING COUNCIL, E—Functions, New item 6:

To approve all standards promulgated in the name of the Association.

Item 6 becomes item 7.

ARTICLE III GOVERNING COUNCIL, E—Functions, item 7:

To receive from the Executive Board at its first session, at the time and place of the annual meeting of the Association, a definitely formulated statement of a program of the major activities proposed for the ensuing year. (To determine at the annual meeting of the Association in general outline the allocation of Association moneys in the budget for the ensuing year.) To require a report from the Chairman of the Executive Board in which the work, the accomplishments and the financial status of the Association during the year preceding such annual meeting shall be reviewed.

Item 7 becomes item 8.

ARTICLE IV OFFICERS

The officers of this Association shall be a President, a President-elect, three Vice-Presidents, an Executive Secretary, a Treasurer, and the Chairman of the Executive Board. The officers, with the exception of the Chairman of the Executive Board and the Executive Secretary, shall be elected by written ballot of the Governing Council as provided in this article and in the By-laws. The President-elect shall serve as such from the close of the annual meeting at which he was elected to the close of the next annual meeting, when he shall automatically become President. As President he shall serve to the close of the next succeeding annual meeting. *However, in case of the inability of the President to complete his term for any reason, the President-elect shall at once succeed to the duties of*

President, filling the unexpired term of his predecessor and his own term consecutively. Other officers shall serve from the close of the annual meeting when elected, until the close of the next annual meeting, and all officers shall serve in any case until their successors are elected and qualified. A majority vote of the Councilors voting shall be required to elect, and if no candidate receives a majority vote on the first ballot, the candidate receiving the smallest number of votes shall be dropped after each ballot in succession until a majority vote is obtained. The Chairman of the Executive Board and the Executive Secretary shall be elected by the Executive Board, which Board shall define the duties and authority of these officers, respectively.

NOMINATIONS FOR THE GOVERNING COUNCIL

IN accordance with the By-laws of the Association, the Nominating Committee reports the following nominations for the Governing Council. The By-Laws provide that "upon the petition of twenty-five Fellows, the Nominating Committee shall add the name of any Fellow to this list, providing such petition is received fifteen days before the Annual Meeting." The Chairman of the Committee is Dr. Huntington Williams, Commissioner of Health, Baltimore, Md.

The ten Fellows receiving the highest number of votes on a written ballot cast by the Fellows present and voting at the Annual Meeting in Detroit will be elected for the three year term 1940–1943.

Margaret G. Arnstein, R.N.
University of Minnesota
Minneapolis, Minn.

Herman G. Baity, Sc.D.
University of North Carolina
Chapel Hill, N. C.

S. Josephine Baker, M.D.
Princeton, N. J.

M. E. Barnes, M.D.
State University of Iowa
Iowa City, Ia.

Richard A. Bolt, M.D.
Cleveland Child Health Association
Cleveland, Ohio

Selwyn D. Collins, Ph.D.
U. S. Public Health Service
Washington, D. C.

I. S. Falk, Ph.D.
Social Security Board
Washington, D. C.

Carl R. Fellers, Ph.D.
Massachusetts State College
Amherst, Mass.

A. Grant Fleming, M.D.
McGill University
Montreal, Que., Can.

Leslie C. Frank, C.E.
U. S. Public Health Service
Washington, D. C.

Elizabeth M. Gardiner, M.D.
State Department of Health
Albany, N. Y.

Edward S. Godfrey, Jr., M.D.
State Commissioner of Health
Albany, N. Y.

Ira V. Hiscock, Sc.D.
Yale University
New Haven, Conn.

A. Parker Hitchens, M.D.
University of Pennsylvania
Philadelphia, Pa.

D. Breese Jones, Ph.D.
U. S. Department of Agriculture
Washington, D. C.

A. J. Lanza, M.D.
Metropolitan Life Insurance Company
New York, N. Y.

Katherine F. Lenroot
U. S. Children's Bureau
Washington, D. C.

Pearl McIver, R.N.
U. S. Public Health Service
Washington, D. C.

Roy J. Morton
Vanderbilt University
Nashville, Tenn.

Hugo Muench, Jr., M.D.
Rockefeller Foundation
New York, N. Y.

Nels A. Nelson, M.D.
State Department of Health
Boston, Mass.

J. T. Phair, M.B.
Provincial Department of Health
Toronto, Ont., Can.

Charles L. Pool
State Department of Health
Providence, R. I.

Samuel C. Prescott, Sc.D.
Massachusetts Institute of Technology
Cambridge, Mass.

Wilbur A. Sawyer, M.D.
Rockefeller Foundation
New York, N. Y.

Clarence D. Selby, M.D.
General Motors Corporation
Detroit, Mich.

Thomas F. Sellers, M.D.
State Department of Public Health
Atlanta, Ga.

Marion W. Sheahan, R.N.
State Department of Health
Albany, N. Y.

Elizabeth L. Smellie, R.N.
Victorian Order of Nurses for Canada
Ottawa, Ont., Can.

Felix J. Underwood, M.D.
State Health Commissioner
Jackson, Miss.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

William A. Bevacqua, M.D., City Bldg. Annex, Parkersburg, W. Va., Health Officer, Wood County Health Dept.

John M. Cruikshank, M.D., D.P.H., Chief Medical Officer, Nassau, Bahamas, B.W.I.

John W. Elder, M.D., 507 N. 12th St., Albuquerque, N. M., Deputy Dist. Health Officer, State Dept. of Public Health

Dean W. Gilman, M.D., 832 Solano St., Los Angeles, Calif., Asst. Health Officer

Edward E. Hamer, M.D., State Board of Health, Carson City, Nev., State Health Officer

Hubley R. Owen, M.D., 319 South 16th St., Philadelphia, Pa., Director, Dept. of Public Health

Laboratory Section

Alice L. Borden, M.S., 2709 East Mabel St., Tucson, Ariz., Bacteriologist and Technologist for Drs. Holbrook & Hill

Jose J. Escobar, M.D., Calle 15 4–58, Cali, Colombia, S. A., Instituto Profilactico de Cali Laboratorio

Andrew J. Estona, 201 Bunnell St., Bridgeport, Conn., Laboratory Technician, Estona's Clinical Laboratory

Charles H. Harp, M.S., Manteno State Hospital, Manteno, Ill., Bacteriologist

Alonso Restrepo, M.D., Carrera 47 50–31, Medellin, Antioquia, Colombia, S. A., Director de "Boletin Clinico"

George E. White, B.S., 200 S. E. Third St., Evansville, Ind., Chief Milk Inspector, City of Evansville

Vital Statistics Section

Kenneth F. Blankenship, 116 North State St., Springfield, Ill., Senior Tabulating Operator, State Dept. of Public Health

Engineering Section

David B. Dickson, B.A., 3210 Milby St., Wichita Falls, Tex., City Chemist

Leonard Dworsky, B.S., Mt. Sterling, Ill., Sanitary Engineer, Health Unit 9, State Dept. of Public Health

Arnold A. Prucha, A.B., Winnetka Health Dept., Village Hall, Winnetka, Ill., Sanitarian

Industrial Hygiene Section

Louis Goldberg, B.S., in Ch., 1800 W. Fillmore St., Chicago, Ill., Industrial Chemist, State Dept of Public Health

Robert Lam, B.S., Board of Health, Honolulu, T. H., Asst. Sanitary Engineer

Food and Nutrition Section

Ruth Buckner, B.S., 221 S. 20th St., Omaha, Nebr., Director, The Dairy Council

Carl A. Hoppert, Ph.D., Box 626, East Lansing, Mich., Professor of Biochemistry, Michigan State College

Public Health Education Section

Dr. Jorge Bejarano, Facultad de Medicina, Bogota, Colombia, S. A., Professor de Higiene, Facultad de Medicina

Marian L. Fahey, M.A., Ph.B., P. O. Box 634, Troy, N. Y., Executive Secretary and Health Teaching Supervisor, Rensselaer County Tuberculosis and Public Health Assn.

James O. Greenwell, Jr., M.D., Bret Harte Sanatorium, Murphys, Calif., Surgeon

Jennelle V. Moorhead, B.A., 206 Masonic Bldg., Salem, Ore., Executive Secretary, Marian County Public Health Assn.

Mary H. Peterson, A.B., 225 Greenwood St., Littleton, Colo., Secretary, Arapahoe County Public Health Assn.

L. M. Smith, M.D., Board of Education Bldg., Pittsburgh, Pa., Chief Medical Examiner, Pittsburgh Board of Education

Edith M. Wyatt, R.N., P. O. Box 663, Uniontown, Pa., Executive Secretary, Fayette County Tuberculosis Society

Public Health Nursing Section

Lilith C. Davenport, R.N., Ibapah, West Toole County, Utah. Staff Nurse, State Board of Health

Janet O. Fordyce, R.N., B.A., Court House, Boone, Iowa, Boone County Nurse

Helen Le Lacheur, R.N., M.A., 700 Brazos St., Austin, Tex., Advisory Nurse, Texas Tuberculosis Assn.

Letha V. Wells, R.N., Ext. Russell Blvd., Chariton, Iowa, Nurse, Mahaska County Nursing Service

Epidemiology Section

Harald M. Graning, M.D., U. S. Public Health Service, 14th Ave. & Lake St., San Francisco, Calif., Assistant Surgeon

Saul Jarcho, M.D., 145 Central Park West, New York, N. Y., Associate in Pathology, College of Physicians & Surgeons, Columbia Univ.

Chastina A. Kendall, R.N., B.S., Yorktown Heights, Westchester County, N. Y., Public Health Nurse, Westchester County Dept. of Health

Unaffiliated

Winifred B. Bonham, R.N., M.A., 398 Spring St., Portland, Maine, Nursing Consultant, American National Red Cross

Evelyn Johnson, A.B., Hotel Congress, Pueblo, Colo., Medical Social Worker, Div. of Public Health

Leon Price, B.A., M.S.P.H., 715 Arbor St., Ann Arbor, Mich., Student, University of Michigan

DECEASED MEMBERS

Malcolm O. Austin, M.D., San Francisco, Calif., Elected Member 1938

F. M. Houghtaling, M.D., Sandusky, Ohio, Elected Member 1920

Philip P. Jacobs, Ph.D., Morristown, N. J., Elected Member 1912, Elected Fellow 1922

Casper W. Miller, M.D., Wallingford, Pa., Elected Member 1919

Hyman I. Vener, M.D., Los Angeles, Calif., Elected Member 1934

EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing officers the names of qualified public health personnel and to act as a clearinghouse on employment. This is a service of the Association conducted without expense to employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

Positions Wanted

ADMINISTRATIVE

Physician, M.P.H., Harvard, a student of maternal problems, wishes position preferably with teaching opportunities. **A461**

Unusually well trained physician, Dr.P.H., Harvard, background of laboratory research and experimental epidemiology, wishes opportunity to acquire field administrative experience under good auspices. **A460**

Administrative public health or epidemiological position is desired by well qualified physician, with M.P.H. degree, 16 years' experience as county and city health officer, and 3 years epidemiologist. **A206**

Physician, M.P.H., Harvard; well experienced in city and rural health administration, will consider appointment as district health officer or in city or state health department. **A418**

Physician, with Dr.P.H. degree, who has had 6 years' experience as public health administrator, seeks administrative position in full-time city or city-county health department. **A367**

Well qualified physician, with M.P.H. from Johns Hopkins, and experienced as county health officer and now assistant health officer in a large city, will consider county or city administrative position. **A383**

Physician, 32; M.D., 1936; postgraduate course in venereal disease control, experienced as district health officer and in organizing and publicizing syphilis control campaign; now employed in charge venereal disease clinics in metropolitan health department; seeks venereal disease control post with opportunity to organize or administer program. **A437**

LABORATORY

Young man, bacteriologist, especially trained in viruses and rickettsiae, and all phases of public health laboratory work; Sc.D., Johns Hopkins; now assistant state laboratory director; qualified to consider teaching, executive, administrative or research position; particularly interested in and qualified for practical laboratory methods with viruses. **L451**

Experienced bacteriologist, young man of 33, Sc.B., who for several years has been in charge of state laboratory doing public health and diagnostic bacteriology, immunology and serology, will consider opening. **L427**

Bacteriologist, serologist, B.S., M.A. degrees, 2 years' experience foods, dairy and biochemistry in public health laboratory, desires position in research or routine. **L454**

ENGINEERING

Public health engineer, B.S. in Sanitary Engineering from Massachusetts Institute of Technology; experienced in Massachusetts, Connecticut, and Kentucky, seeks position as sanitary or public health engineer with health department. **E380**

Engineer, aged 38, with 3 years' experience as district sanitation supervisor, state department of health, together with work on plumbing, heating, and ventilation, will consider position in the plumbing and heating field or state department of health. Prefers middle western or western states. **E453**

Engineer with good training and experience in water treatment, sewage plant operation, and in research, wishes position as superintendent. Can go anywhere. **E422**

HEALTH EDUCATION

Unusually well qualified young woman with background in health education and nutrition is available for immediate appointment in state or local agency. Best references. **H459**

HEALTH EDUCATION

Young woman with splendid educational background, graduate of Massachusetts Institute of Technology health education courses; M.A., Columbia University; seeks position in health education or nutrition. **H462**

ADVERTISEMENT

Opportunities Available

PUBLIC HEALTH PHYSICIANS—(a) Physician with Master's or Doctor's degree in public health for teaching appointment in department of public health; administrative as well as teaching duties; midwestern university medical school. (b) Research-minded physician with well rounded training in medicine; must be poised, convincing public speaker, although work largely investigative. (c) County health officer; southern-born physicians preferred; about $275. (d) Young physician interested in public health for county health appointment; 3 months' training provided; salary following training period $2,700. (e) Several young physicians interested in making public health their career; opportunities for advanced public health training in recognized centers interspersed with county or state health work; $2,700–$3,600, plus travel allowance of $600 yearly. (f) Public health physician, especially well trained in field of venereal diseases; state health program; maximum stipend $3,900. (g) City health physician; colorful western town having well organized department with staff of 14; $3,600 plus $300 travel allowance. (h) City health physician; city of 50,000; Atlantic Seaboard. Write PH-60, Medical Bureau, Palmolive Building, Chicago.

STUDENT HEALTH PHYSICIANS—(a) Two for fairly large colleges, beautifully located; California. (b) Resident physician; exclusive school for boys; research in school's well equipped laboratory encouraged; recent graduate; unmarried, preferred. (c) University health service; physician under 45 with teaching experience required; large state university. (d) Student health physician; internationally known school rich in tradition; duties will include medical care of men, consultations, teaching, X-ray supervision. (e) Student health physician; fairly large university; Pacific Coast; woman eligible. PH-81, Medical Bureau, Palmolive Building, Chicago.

PUBLIC HEALTH NURSES—(a) Public health nurse with B.S. degree, preferably Catholic; teaching appointment in 500 bed Catholic hospital; duties include supervision of students in the field and teaching formal classes in public health and social science. (b) Public health nurse with degree for health education directorship, county tuberculosis society, initial stipend $1,620 plus car allowance for 41 hour week; annual increases. (c) Graduate nurse with degree and public health training to direct outpatient department, 250 bed hospital; up to $200, partial maintenance; week averages 44 hours. (d) Certified public health nurse for county health work; $1,800 plus $600 travel allowance; West. (e) Certified public health nurse for appointment sponsored by Junior League; midwestern town of 50,000. PH-82, Medical Bureau, Palmolive Building, Chicago.

SCHOOL NURSES—(a) Graduate nurse with college degree, preferably 25–30, for interesting appointment as counselor in dormitory of exclusive school for girls; salary adequate to attract outstanding person; fall appointment. (b) Public school nurse; should have excellent academic background in addition to public health training; $135; Michigan. (c) School nurse qualified to teach Junior Nursing course; minimum 15 college hours in education necessary; small community not far from Chicago. (d) Public school nurse; Wisconsin lake country. (e) School nurse, certified, for district averaging 1,700 pupils; 5 nurses on staff; $125, plus car allowance. PH-83, Medical Bureau, Palmolive Building, Chicago.

BACTERIOLOGIST—(a) Department of bacteriology, eastern medical school. (b) Laboratory of experimental surgical bacteriology; $1,000; large university. (c) Laboratory of southern medical school; M.S. in bacteriology desirable. PH-84, Medical Bureau, Palmolive Building, Chicago.

BACTERIOLOGISTS — (a) Research bacteriologist; Ph.D. or D.Sc. degree required; Gentile; state department of health; $3,000. (b) Bacteriologist with training and experience public health bacteriology to direct activities of technicians examining specimens requiring microscopy; Gentile required; $2,500. PH-85, Medical Bureau, Palmolive Building, Chicago.

Situations Wanted

PUBLIC HEALTH PHYSICIAN—B.S. and M.D. degrees, eastern schools; C.P.H., Johns Hopkins School of Hygiene; 5 years chief epidemiologist State Department of Health; for further information, please write M. Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

PUBLIC HEALTH EXECUTIVE—Young layman who is now completing graduate training in public health, preventive medicine, and bacteriology is available for a public health position or one involving public relations; Bachelor's degree from midwestern university, 8 years' experience as public relations counsel; will go anywhere; for further information please write M. Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

PUBLIC HEALTH NURSE—B.A. degree; graduate of one of country's leading training schools; postgraduate training in public health and hygiene, state university; for further details, please write M. Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

PUBLIC HEALTH NURSE—Teacher's certificate from state teachers college; graduate training in public health nursing, University of Minnesota; 6 years, public health nurse; 3 years, chief supervising nurse, division of child hygiene; for further information, please write M. Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

BACTERIOLOGIST—B.S. and M.S. degrees, state university; year's training in laboratory work under direction of well known pathologist; 4 years, bacteriologist on staff large teaching hospital where she has done considerable research work in hematology; registered; for further information, please write M. Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

NEWS FROM THE FIELD

Denver Meeting of the Western Branch

THE 11th Annual Meeting of the Western Branch, American Public Health Association was held in Denver, Colo., June 23–27, under the Presidency of Dr. Frederick D. Stricker, State Health Officer of Oregon.

Nearly 600 persons participated in the 5 day sessions, including a number from states in the midwest not usually represented at the Western Branch sessions. The Branch area includes the 11 western states, the western Canadian provinces, and the territories of Alaska and Hawaii.

The changes in public health activities which have taken place in the 9 years since the Branch last met in Denver were apparent not only in the numbers attending but in the character of the program. Industrial hygiene, crippled children's work, nutrition, and dental hygiene were prominent features in 1940, in contrast to the limited interest shown in these subjects in 1931.

An unusually strong representation was present from the U. S. Public Health Service, the Children's Bureau, the Federal Indian Service, the Bureau of the Census, and the universities of both East and West.

The program was systematically developed under a committee of which Dr. Charles E. Smith of San Francisco was Chairman, using a variety of program devices to present modern viewpoints and new advances in fields covering many aspects of public health.

Among the participants in the program from outside the area of the Western Branch were the following:

Margaret Arnstein, R.N., Minneapolis, Minn.
Donald B. Armstrong, M.D., New York, N. Y.
Reginald M. Atwater, M.D., New York, N. Y.
Robert Beaumier, M.A., Washington, D. C.
Charles F. Blankenship, M.D., Washington, D. C.
J. J. Bloomfield, Washington, D. C.
Frank C. Cady, D.D.S., Washington, D. C.
Aubyn Chinn, Chicago, Ill.
Harold D. Chope, M.D., Dr.P.H., Boston, Mass.
Walter Clarke, M.D., C.P.H., New York, N. Y.
H. R. Crohurst, Cincinnati, Ohio
J. O. Dean, M.D., Washington, D. C.
Mayhew Derryberry, Ph.D., Bethesda, Md.
Warren F. Draper, M.D., Washington, D. C.
Halbert L. Dunn, Ph.D., M.D., Washington, D. C.
Martha M. Eliot, M.D., Washington, D. C.
Kendall Emerson, M.D., New York, N. Y.
Leslie C. Frank, Washington, D. C.
Marion C. Henderson, Washington, D. C.
Henry A. Holle, M.D., Washington, D. C.
Sam A. Kimball, Washington, D. C.
S. D. Kramer, M.D., Lansing, Mich.
Harry Mitchell, Washington, D. C.
Emory W. Morris, D.D.S., Battle Creek, Mich.
Rosalie I. Peterson, R.N., Washington, D. C.
R. H. Riley, M.D., Baltimore, Md.
James G. Townsend, M.D., Washington, D. C.
R. A. Vonderlehr, M.D., Washington, D. C.

Dr. William P. Shepard, of San Francisco, was installed as *President* of the Western Branch for the coming year. Dr. John J. Sippy of Stockton, Calif., Health Officer of the San Joaquin Health District, was named *President-elect*. W. Ford Higby, San Francisco, was reëlected *Secretary*. The Branch meeting in 1941 will be held in the area which includes Arizona and Southern California.

RESOLUTION ADOPTED BY WESTERN BRANCH, A.P.H.A., JUNE 26, 1940

WHEREAS, within the past few weeks the events of the war in Europe have aroused the people of the United States to the full realization that the future of our democratic form of government and its institutions is at stake, and

WHEREAS, the President and Congress of the United States are in full accord that a National Defense Program, larger than ever before undertaken in the history of this country, be put into operation, and

WHEREAS, every assistance should be given to our President to carry out the most effective and complete National Defense Program as outlined by him and which the Congress and the people of the United States have endorsed, therefore be it

RESOLVED, that the United States members of the Western Branch of the American Public Health Association at the Eleventh Annual Meeting held in Denver, Colo., pledge themselves with all their energy and fidelity to assist the President in carrying out the policies of the National Defense Program for the protection and preservation of the health, lives, and happiness of our American people, and be it further

RESOLVED, that we advocate and recommend that state and local health departments and their personnel be specifically designated as an essential part of the National Defense Program, not only for safeguarding the health and maintaining the physical fitness of the civilian population, but to cope with any future emergencies that may threaten the public health as they arise. Be it further

RESOLVED, that measures be taken by the Army, Navy, and Marine Corps, such as those Services deem proper and advisable to insure that the staffs of state and local health departments will not be depleted and disorganized to such an extent that they will be unable to afford health protection to the civilian population as provided for by Congress in the Social Security Act, Titles V and VI. Be it further

RESOLVED, that suitable means be provided by the military services to avoid the humiliation and embarrassment to which health department personnel of military age would be subjected if not in uniform while serving their community in an official capacity under the National Defence Program. Be it further

RESOLVED, that this act of the United States members of the Western Branch of the American Public Health Association be transmitted to the Surgeon General of the United States Public Health Service through the Parent Association, with the request that he in turn transmit it officially to the proper authorities in the War and Navy Departments. Be it further

RESOLVED, that consideration be given by the Surgeon General of the United States Public Health Service to the desirability of calling a special meeting of the Conference of State and Territorial Health Officers to discuss these and other matters relating to the organization and functioning of public health departments in connection with the National Defense Programs.

WESTERN BRANCH, A.P.H.A., ELECTS HONORARY MEMBER

AT the 11th Annual Meeting of the Western Branch, American Public Health Association, held in Denver, Colo., June 23–27, William T. Shepard, M.D., of Palo Alto, Calif., was elected an honorary member of the Branch. Dr. Shepard is the father of Dr. William P. Shepard, who was installed as President of the Western Branch at the Denver meeting, and of Dr. Charles E. Shepard of Stanford University.

Other honorary members previously elected include Hon. Herbert Hoover, of Palo Alto, Calif., and Arthur T. McCormack, M.D., of Louisville, Ky.

COLUMBIA TO GIVE DR.P.H. DEGREE

THE degree of doctor of public health has been established at the DeLamar Institute of Public Health, Columbia University College of Physicians and Surgeons, New York, N. Y., to meet the demand for specialized training in the field. The degree has been introduced at Columbia as part of the program of the Institute to supply qualified physicians to fill positions which call for specialized education of a high order.

Students who wish to matriculate for the degree must be graduates of an approved medical school and have served an internship of at least one year in a recognized hospital. The program of studies for the degree in-

cludes two years of graduate work, one of which must be spent at the Institute. If the student chooses, permission may be granted to do one year of field work in some locality other than New York.

MONTANA PUBLIC HEALTH ASSOCIATION ELECTS OFFICERS

AT its recent annual meeting, held in Bozeman, the Montana Public Health Association elected the following officers, to serve for the coming year:

President—Dr. John X. Newman, Butte
Vice-President—Helen Murphy, Butte
Secretary—Dr. William F. Cogswell, State Health Officer, Helena.

SCHOOL PHYSICIANS CONFERENCE

THE New York State Association of School Physicians held its annual conference at Saratoga Springs, N. Y., June 24.

The following officers were elected:

President—William Ayling, M.D., Syracuse
Vice-President—Edgar Bieber, M.D., Dunkirk
Secretary-Treasurer—C. Adele Brown, M.D., Oswego.

SEWAGE PURIFICATION (LONDON) SUSPENDS PUBLICATION

SEWAGE PURIFICATION, of London, has suspended publication with the June, 1940, issue, "until the termination of hostilities." This is due to shortage of paper and "cessation of means of communication with foreign countries."

It is expected that the journal will resume publication at a later date.

PERSONALS

Central States

DR. RUSSELL R. HEIM, of Minneapolis, Minn., has been appointed Health Commissioner of Hennepin County, succeeding the late DR. THOMAS T. WARHAM.

DR. FREDERICK W. HOFFBAUER, of Minneapolis, Minn., has been appointed physician on the staff of the Health Service of the University of Minnesota, effective September 16.

JOHN P. KOEHLER, M.D.,* Commissioner of Health of Milwaukee, Wis., since 1925, has resigned as of July 1 and has announced his candidacy for U. S. Senator on the Republican ticket.

EDWARD G. MCGAVRAN, M.D., M.P.H.,† formerly Health Officer of Hillsdale County, Hillsdale, Mich., and on the staff of the W. K. Kellogg Foundation, has accepted a position as Director of the State Training Center for public health workers in West Virginia, at Morgantown.

DR. BERNARD A. WATSON has resigned as head of the Student Health Service at the University of Minnesota, Minneapolis, to join the staff of the Battle Creek Sanatorium, Battle Creek, Mich.

Eastern States

DR. JOSEPH E. CANBY, of Great Barrington, Mass., has been appointed Medical Examiner of the Southern Berkshire area, succeeding DR. JOHN B. BEEBE, retired. The area includes all towns from Stockbridge to the Connecticut line and west to the New York State line.

DR. L. WHITTINGTON GORHAM, of Albany, N. Y., has been appointed a member of the New York State Public Health Council, to fill the vacancy created by the death of DR. LIVINGSTON FARRAND.* The term will expire December 31, 1942.

ROBERT C. HUME, M.D., M.P.H.,† of Olean, N. Y., recently on the staff of the Cattaraugus County Health Department, has been appointed as Assistant District State Health Officer.

WILFRED L. J. MCDONALD, M.D., M.P.H.,† of Glens Falls, N. Y., formerly an Assistant District Health Officer, has been appointed Health

* Fellow A.P.H.A.
† Member A.P.H.A.

Commissioner of Columbia County, effective April 1.

JOSEPH WEINSTEIN, M.D., M.S.P.H.,† who has served as medical consultant in social hygiene at the New York City Health Department, has been promoted to the position of Medical Officer-in-Charge and has been assigned to the Westchester-Pelham Bay Health District of the New York City Department of Health.

Southern States

DR. LYNN D. ABERNETHY, of Grenada, Miss., has been made Director of Health in Marshall County, relieving JOHN W. DUGGER, M.D.,† who had been Acting Health Officer.

DR. EDWARD S. ARMSTRONG went on duty June 15 as full-time Venereal Disease Control Officer, attached to the Chatham-Savannah Health Department, Savannah, Ga., to serve as Administrator to their Venereal Disease Control Program. Dr. Armstrong has served as City-County Health Officer at Cordele, Crisp County, Ga. The Department is sending him to Philadelphia, for a 3 months period of training, at Dr. John H. Stokes's Clinic, beginning September 15.

WALLACE BYRD, M.D.,† recently of Manchester, Ky., has been appointed Health Officer of Owen County, to succeed DR. PRICE SEWELL, JR., now of Fayette County.

DR. HERMAN T. CARTER, of Edmonton, Ky., has been appointed Director of a 2 county health unit for Green and Metcalfe Counties.

DR. HUGH L. DWYER, child specialist and member of the faculty of the University of Kansas Medical School, Kansas City, Kans., has been appointed Director of Health of Kansas City, succeeding EDWIN H. SCHORER, M.D., Dr.P.H.,* resigned.

BYRON O. GARNER, M.D.,† of Greenwood, Miss., Acting Officer in Leflore County, has been made full-time Director in Noxubee County.

DR. EDWARD C. HUMPHREY, of Somerset, Ky., has resigned as Health Officer of Pulaski County, to accept a similar position in Mercer County. DR. MILDRED E. BURTON, formerly of Berea, will succeed him in Pulaski.

RANSOM J. JONES, M.D.,† of Poplarville, Miss., has been appointed Director of the Leflore County Health Department; he has been in charge of the southeastern health district, composed of George, Greene, Stone, and Perry Counties.

JAMES H. LEVAN, C.E.,† has been transferred to the Division of Industrial Hygiene, of the National Institute of Health, Bethesda, Md., from the U. S. Quarantine Station, Miami Beach, Fla. He took the motorized Aedes aegypti Control Unit in convoy from Brownsville, Tex., where it had been detailed for the past 7 months, to the Miami Beach, Fla., Quarantine Station—the Unit has now been disbanded.

GEORGE W. MCCOY, M.D.,† for 40 years on active duty in the U. S. Public Health Service, retired June 30. Dr. McCoy is now Director of the Department of Preventive Medicine and Public Health, at the Louisiana State University School of Medicine, New Orleans, La.

DR. JAMES E. PEAVY, JR., of Austin, Tex., recently became Director of the Health Unit for San Augustine and Sabine Counties.

ALTON R. PERRY, M.D., M.P.H.,† of Laurel, Miss., has resigned as Director of the health unit in Jones County.

MILTON J. ROSENAU, M.D.,* Director of the Division of Public Health, School of Medicine, of the University of North Carolina, Chapel Hill, N. C., has been appointed first Dean.

* Fellow A.P.H.A.
† Member A.P.H.A.

DR. JAMES W. SCUDDER, of Carlisle, Ky., has resigned as Health Officer of Nicholas County.

DR. MURPHY M. SIMS, of Lexington, Miss., Acting Director of Holmes County, has been appointed Health Officer of Lafayette County, succeeding DR. JAMES H. ARMSTRONG, of Oxford, who resigned to enter private practice.

DR. RALPH SNEED, of University, Miss., has been named Director of the newly established Health Department in Marion County.

DR. JOHN W. SPIES, Dean and Professor of Public Health, University of Texas School of Medicine, Galveston, was recently elected to the Royal Society of Tropical Medicine and Hygiene in London.

WILLIAM H. F. WARTHEN, M.D., M.P.H.,* who, since 1934, has been Assistant Commissioner of Health of Baltimore, Md., has been appointed Commissioner of Health of Baltimore County, effective August 1, succeeding JOSIAH S. BOWEN, M.D.,† of Mount Washington, Md., who resigned because of serious illness after 26 years in charge of the Department. Dr. Warthen is a graduate of Johns Hopkins University; M.D., 1922, and M.P.H., 1940.

DR. EDWIN H. WEST, of Purvis, Miss., has been appointed in charge of Perry County, succeeding RANSOM J. JONES, M.D.†

JAMES H. WHITE, M.D.,† of Corinth, Miss., Acting Health Officer in Alcorn County, has been placed on a full-time basis.

DR. SAMUEL D. WHITTEN, of Greenville, Tex., has been appointed Health Officer of Hunt County, to succeed DR. LEMUEL E. GEE, resigned.

Western States

COURTNEY SMITH, M.D.,† has resigned from the Portland, Ore., City Health Department to accept a position in the Territorial Department of Health in Juneau, Alaska, where he is in charge of the maternity and child health division.

Puerto Rico

DR. TOMAS F. BLANCO, of San Juan, Puerto Rico, has been placed in charge of the new Bureau of Medical Education which has been established by the Department of Health of Puerto Rico to assist in educating the population in health matters in connection with the work of the various health units. The Department is also coöperating with the School of Tropical Medicine and the University of Puerto Rico in plans for the establishment of a school of public health in San Juan for postgraduate training of public health officials, nurses, sanitary inspectors, and laboratory technicians.

DR. MARIANO B. CABALLERO, of San Juan, Puerto Rico, has been appointed a member of the Board of Medical Examiners of Puerto Rico, to succeed DR. LUIS J. FERNANDEZ, of San Juan, whose term expired.

DEATHS

DR. WILLIAM A. EVANS, for 15 years a member of the Board of Health, Detroit, Mich., died June 9.

J. G. FITZGERALD, M.D.,* of the School of Hygiene, University of Toronto, Toronto, Ont., Canada, died recently.

FILIP C. FORSBECK, M.D.,* of the U. S. Public Health Service, died at Cincinnati, Ohio, July 13. Dr. Forsbeck, who was a graduate in medicine of the University of Chicago in 1925, was professionally connected at various times with the Massachusetts Department of Public Health, the Rockefeller Institute for Medical Research, the Michigan Department

* Fellow A.P.H.A.
† Member A.P.H.A.

of Health, and the U. S. Public Health Service. Dr. Forsbeck, who joined the Association in 1932, became a Fellow in 1935, was Secretary of the Epidemiology Section in 1937, 1938, and 1939, and at the time of his death was Vice-Chairman of the Epidemiology Section.

CONFERENCES AND DATES

American Association of Public Health Dentists. Cleveland, Ohio. September 8–9.

American College of Physicians—25th Annual Session. Statler Hotel, Boston, Mass. April 21–25, 1941.

American Dental Association. Cleveland, Ohio. September 9–13.

American Dietetic Association — 23rd Annual Convention. Pennsylvania Hotel, New York, N. Y. October 21–24.

American Hospital Association. Boston, Mass. September 16–20.

American Public Health Association —69th Annual Meeting. Book-Cadillac Hotel, Statler Hotel, Detroit, Mich. October 8–11.

American Public Works Association. Detroit, Mich. September 30–October 2.

American Society of Civil Engineers—Fall Meeting. Cincinnati, Ohio. October 16–18.

American Water Works Association.

Michigan Section — University of Michigan Union, Ann Arbor, Mich. September 11–13.

Rocky Mountain Section — Cosmopolitan Hotel, Denver, Colo. September 16–17.

Western Pennsylvania Section — Castleton Hotel, New Castle, Pa. September 18–20.

Wisconsin Section — Hotel Manitowoc, Manitowoc, Wis. October 14–16.

Southwest Section — Mayo Hotel, Tulsa, Okla. October 14–17.

New Jersey Section — Atlantic City, N. J. October 18–19.

Kentucky-Tennessee Section — Lafayette Hotel, Lexington, Ky. October 21–23.

California Section—Los Angeles Biltmore Hotel, Los Angeles, Calif. October 23–26.

North Carolina Section—Sir Walter Raleigh Hotel, Raleigh, N. C. October 28–30.

Four States Section—Hotel Dupont, Wilmington, Del. November 7–8.

Minnesota Section—St. Paul Hotel, St. Paul, Minn. November 7–8.

Missouri Valley Section—Hotel Fontenelle, Omaha, Nebr. November 13–15.

Association of American Medical Colleges. Ann Arbor, Mich. October 28–30.

Canadian Public Health Association—29th Annual Meeting. Winnipeg, Man. September 23–28.

Dairy Industries Supply Association. Atlantic City, N. J. October 21–26.

Federation of Sewage Works Associations—First Annual Convention, in conjunction with the 1940 Annual Meeting of the Central States Sewage Works Association. Hotel Sherman, Chicago, Ill. October 3–5.

Florida Public Health Association. Tampa, Fla. December.

Idaho Public Health Association—First Annual Meeting. Twin Falls, Idaho. September 9–10.

Indiana State Medical Association. French Lick Springs Hotel, French Lick, Ind. October 29–31.

Institute on Science and the Nation's Food. Wellesley College, Wellesley, Mass. October 24–26.

International Association of Milk Sanitarians. Joint Meeting with the New York State Association of Dairy and Milk Inspectors. Hotel Pennsylvania, New York, N. Y. October 17–19.

Interstate Post-Graduate Medical Assembly. Cleveland, Ohio. October 13–19.

Michigan Public Health Association. Detroit, Mich. October 8–11.

National Association of Coroners. Hotel Adelphia, Philadelphia, Pa. August 26–28.

National Chemical Exposition—sponsored by the Chicago Section of the American Chemical Society. Stevens Hotel, Chicago, Ill. December 11–15.

National Medical Association. Houston, Tex. August 12–16.

National Recreation Congress—25th. Statler Hotel, Cleveland, Ohio. September 30–October 4.

National Restaurant Association. Chicago, Ill. October 7–11.

National Safety Council. Chicago, Ill. October 7–11.

New Jersey Health and Sanitary Association, Inc. 66th Annual Meeting. Hotel Berkeley-Carteret, Asbury Park, N. J. November 15–16.

Pan-American Congress of Ophthalmology. Hotel Cleveland, Cleveland, Ohio. October 11–12.

Society of American Bacteriologists. St. Louis, Mo. December.

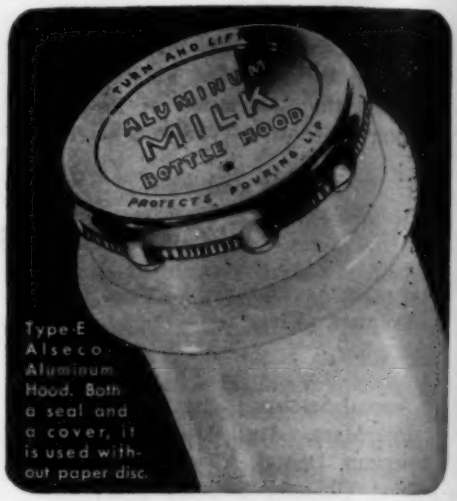
Texas Public Health Association. Fort Worth, Tex. September 30–October 2.

Tri-State Conference of Food and Health Officials. Pittsburgh, Pa. October.

United States Conference of Mayors—1940 Annual Conference. Waldorf-Astoria Hotel, New York, N. Y. September 19–21.

Foreign

Pan American Congress of Tuberculosis—Fifth. Buenos Aires, and Cordoba, Argentina. October 13–17.



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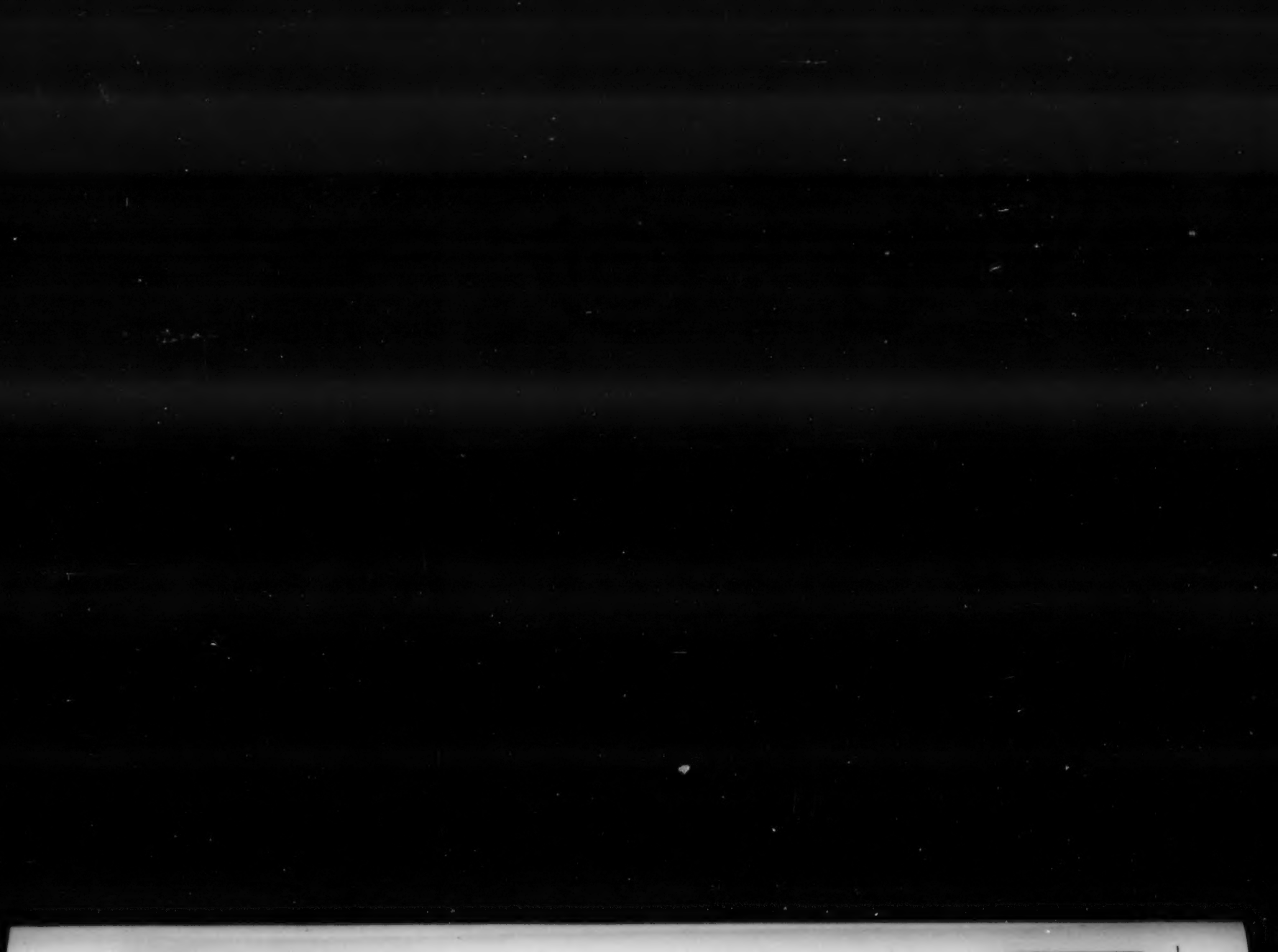
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